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FEBRUARY 1974

MARKETING & TRANSPORTATION Situation

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Item	Unit or base period	1972		1973		
		Year	4th Qtr.	Year	3rd Qtr.	4th Qtr.
Farm-Retail Price Spreads: 1/						
Retail cost	Dol.	1311	1331	1537	1604	1635
Farm value	Dol.	524	538	700	780	721
Farm-retail spread	Dol.	787	793	837	824	914
Farmer's share of retail cost	Pct.	40	40	46	49	44
Retail Prices: 2/						
All goods and services (CPI)	1967=100	125.3	126.9	133.1	134.4	137.6
All food	1967=100	123.5	125.4	141.4	146.2	149.9
Food at home	1967=100	121.6	123.4	141.4	147.1	150.1
Food away from home	1967=100	131.1	133.3	141.4	142.8	149.4
Wholesale Prices: 2/						
Food 3/	1967=100	121.8	124.6	146.9	154.4	154.5
Cotton products	1967=100	121.8	124.3	143.6	148.3	160.6
Woolen products	1967=100	99.4	107.5	128.2	133.6	129.3
Agricultural Prices:						
Prices received by farmers	1967=100	126	132	172	190	183
Prices paid by farmers, interest, taxes and wage rates	1967=100	127	130	145	149	151
Prices of Marketing Inputs:						
Containers and packaging materials	1967=100	117	118	123	124	126
Fuel, power, and light	1967=100	126	128	139	139	151
Services 4/	1967=100	138	141	146	147	149
Hourly Earnings:						
Food marketing employees 5/	Dol.	3.45	3.52	3.66	3.67	3.75
Employees, private nonagricultural sector 2/	Dol.	3.65	3.73	3.89	3.93	4.00
Farmers' Marketings and Income:						
Physical volume of farm marketings	1967=100	110	149	112	105	151
Cash receipts from farm marketings 6/	Bil. dol.	60.7	64.6	83.4	84.5	101.2
Farmers' realized net income 6/	Bil. dol.	19.7	21.3	26.1	25.5	30.4
Industrial Production: 7/						
Food manufacturers	1967=100	118.6	119.4	122.6	122.8	124.5
Textile mill products	1967=100	117.4	124.4	-	129.4	-
Apparel products	1967=100	105.7	110.2	-	113.7	-
Tobacco products	1967=100	103.7	108.9	-	108.2	-
Retail Sales: 8/						
Food stores	Mil. dol.	95,020	24,414	105,627	27,084	27,497
Eating and drinking places	Mil. dol.	33,891	8,745	37,944	9,541	10,046
Apparel stores	Mil. dol.	21,993	5,737	24,043	6,037	6,067
Consumers' Per Capita Income and Expenditures: 9/						
Disposable personal income	Dol.	3,817	3,956	4,194	4,231	4,350
Expenditures for goods and services	Dol.	3,479	3,592	3,821	3,875	3,911
Expenditures for food	Dol.	599	612	661	672	686
Expenditures for food as percentage of disposable income	Pct.	15.7	15.5	15.7	15.9	15.8

1/ For a market basket of farm foods. 2/ Dept. of Labor. 3/ Processed foods, eggs, and fresh and dried fruits and vegetables. 4/ Includes such items as rent, property insurance and maintenance, and telephone. 5/ Average hourly earnings of production workers in food processing, and nonsupervisory workers in wholesale and retail food trades, calculated from Dept. of Labor data. 6/ Quarterly data seasonally adjusted at annual rates. 7/ Seasonally adjusted, Board of Governors of Federal Reserve System. 8/ Quarterly data seasonally adjusted, Dept. of Commerce. 9/ Seasonally adjusted annual rates, calculated from Dept. of Commerce data. Percentages have been calculated from total income and expenditure data.

MARKETING AND TRANSPORTATION SITUATION

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SUMMARY

Widening marketing margins of food marketing firms and rising returns to farmers for food commodities will result in some further increase in retail prices consumers pay for food in the first half of 1974. Retail prices are expected to stabilize by mid-year and possibly decline slightly in the fall if farm prices ease as expected. Rising labor, energy, transportation, and packaging costs are expected to continue widening farm-retail spreads.

The retail cost of a market basket of foods produced on U.S. farms averaged $1,635 (annual rate) in the fourth quarter of 1973, up about 2 percent from the previous quarter. Retail costs decreased in October, then increased in both November and December. For the quarter, the retail cost averaged 23 percent above a year earlier. Prices for practically all farm foods rose significantly.

Gross returns to farmers (farm value of quantities of farm commodities equivalent to retail units) for market basket foods averaged $721 in the fourth quarter, down 8 percent from the preceding quarter but up 34 percent from a year earlier. Returns increased for most items over year-earlier levels with prices for animal products, cereal grains, and oilseeds increasing the most.

Farm-retail spreads for foods from U.S. farms widened sharply in the fourth quarter of 1973 as farm prices dropped and marketing firms readjusted their margins following the relaxing of price controls under Phase IV. The spread between the retail cost and the farm value of the market basket averaged $914 in the fourth quarter, about 11 percent wider than in the previous quarter and 15 percent more than in the fourth quarter of 1972. The spread, or gross margin received by marketing firms for assembling, processing, transporting, and distributing the products of the market basket, widened sharply from year-earlier levels for beef, pork, poultry, eggs, and bakery and cereal products.

Year to year changes in market basket totals for foods from U.S. farms from 1972 to 1973 included:

Higher retail costs, by 17.3 percent or $227
Higher farm value, by 33.5 percent of $176
Wider marketing margins, by 6.5 percent or $51
Larger farmer's share of the retail food dollar, up 6 cents to 46 cents.

FARM-FOOD MARKET BASKET STATISTICS

Fourth Quarter 1973

Retail Cost: Retail prices for food continued to push higher in the fourth quarter of 1973 although at a much slower pace than earlier in the year. The retail cost of a market basket of foods from U.S. farms, which peaked in August after ceiling prices were removed for most foods, decreased in both September and October, but rose again in November and December (table 1). [1]Retail cost of the market basket averaged about 2 percent higher in the fourth quarter of 1973 than in the previous quarter. Increases averaged 6 percent or more in each of the three preceding quarters last year.

On a dollar basis, the retail cost of a market basket of farm-originated foods averaged $1,635 (annual rate) in the fourth quarter, up $31 (or 1.9 percent) from the previous quarter (table 2). Higher prices for bakery and cereal, fats and oils, and dairy products accounted for much of the rise in the fourth quarter. Prices for meats, frying chickens, and fresh fruits and vegetables declined.

Retail food costs were 23 percent higher in the fourth quarter of 1973 than a year earlier. Retail costs for all food groups rose significantly. Egg prices were up 50 percent, poultry and fats and oils were a third higher, and prices of bakery and cereal products and meats were a fourth higher than a year earlier.

Farm Value: The farm value of a market basket of foods from U.S. farms averaged $721 (annual rate) in the fourth quarter, 8 percent less than the record high level of the previous quarter (table 2). Lower prices for beef cattle, hogs, frying chickens, and fresh fruits and vegetables accounted for most of the drop in returns to farmers in the fourth quarter. Prices received for milk, food grains, oilseeds, and dry beans rose.

Returns to farmers for food products in the fourth quarter averaged a third higher than a year earlier. Livestock and milk prices were more than a fourth higher and poultry and egg prices were up over 60 percent. Among crop products, oilseed prices more than doubled and food grain prices were two-thirds higher than a year earlier. Fruit and vegetable prices rose 11 percent; however, dry bean prices in the fourth quarter were 3 times higher than a year earlier.

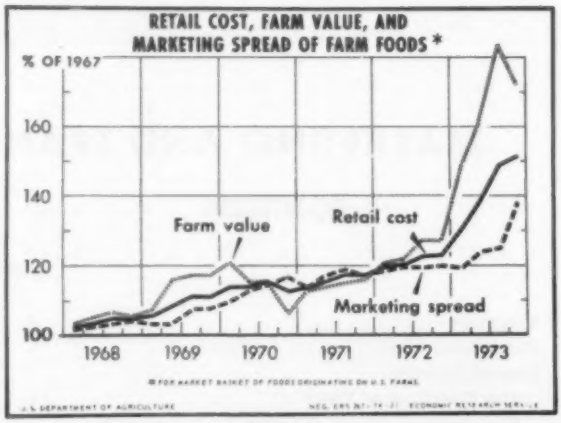

Figure 1

Farm-Retail Spread: The farm-retail spread jumped about 11 percent from the third to the fourth quarter last year as farm prices decreased and marketing firms widened their margins for assembling, processing, transporting, and distributing farm foods following the price freeze last summer. The cost of these services for the market basket of foods averaged $914 in the fourth quarter, $90 more than in the previous quarter when spreads for many products were squeezed. This was the largest quarterly increase in marketing spreads since the third and fourth quarters of 1946 following the lifting of World War II price controls. In the fourth quarter, spreads for practically all foods widened sharply, particularly those for meat products, bakery and cereal products, eggs, and fats and oils products. Spreads for fresh fruits and vegetables decreased.

Marketing spreads in the fourth quarter averaged 15 percent wider than a year earlier. They accounted for about two-fifths of the rise at retail; higher returns to farmers accounted for the remaining three-fifths.

Farmer's Share: Farmers received an average of 44 cents of each dollar spent in retail food stores in the fourth quarter for market basket foods. This was 5 cents less than in the previous quarter, but was 4 cents higher than the fourth quarter of 1972.

Review of 1973

Retail Cost: Consumers spent $1,537 in retail food stores for a market basket of domestically produced foods in 1973, up $227 or 17 percent from the annual

[1]The market basket contains the average quantities of domestic, farm-originated food products purchased annually per household in 1960 and 1961 by wage-earners and clerical worker families and single workers living alone. Its retail cost is calculated from retail prices published by the Bureau of Labor Statistics. The retail cost of the market basket foods is less than the cost of all foods bought per household, since it does not include cost of meals in eating places, imported foods, seafoods or other foods not of U.S. farm origin. The farm value is the gross return to farmers for the farm products equivalent to foods in the market basket minus allowances for byproducts. It is based on prices at the first point of sale and may include some marketing charges incurred by farmers such as grading and packing for some commodities. The farm retail spread-difference between the retail cost and farm value-is an estimate of the total gross margin received by marketing firms for assembling, processing, transporting, and distributing the products in the market basket.

Table 1 .--The market basket of farm food: Retail cost, farm value, farm-retail spread, and farmer's share of the retail cost 1/

Year and quarter	Retail cost	Farm value	Farm-retail spread	Farmer's share
	1967 = 100			Percent
Average:				
1947-49	82.9	106.9	67.7	50
1957-59	91.5	94.8	89.5	40
1963	93.2	90.2	95.1	38
1964	93.4	90.0	95.5	37
1965	96.0	99.2	93.9	40
1966	101.1	106.3	97.8	41
1967	100.0	100.0	100.0	39
1968	103.6	105.3	102.5	39
1969	109.1	114.8	105.5	41
1970	113.7	114.1	113.4	39
1971	115.7	114.4	116.5	38
1972	121.3	125.1	118.9	40
1973 2/	142.3	167.0	126.6	46
1970				
I	113.9	120.3	109.8	41
II	113.9	115.1	113.1	39
III	114.7	114.8	114.6	39
IV	112.3	106.1	116.2	37
1971				
I	113.2	112.3	113.8	38
II	115.7	113.8	117.0	38
III	117.3	115.5	118.4	38
IV	116.7	116.1	116.9	39
1972				
I	119.5	121.2	118.4	39
II	120.1	122.4	118.6	40
III	122.5	128.4	118.7	41
IV	123.1	128.3	119.9	40
1973 2/				
I	130.8	149.3	119.2	44
II	138.5	160.8	124.4	45
III	148.4	186.0	124.6	49
IV	151.3	172.0	138.2	44

Month	Retail cost	Farm value	Farm-retail spread	Farmer's share
	1967 = 100			Percent
1971				
January	112.3	108.8	114.5	38
February	113.3	114.1	112.8	39
March	114.0	114.1	114.0	39
April	115.1	113.3	116.2	38
May	115.5	113.8	116.6	38
June	116.7	114.4	118.2	38
July	117.7	116.7	118.4	38
August	117.7	116.6	118.4	38
September	116.4	113.2	118.3	38
October	115.8	114.2	116.8	38
November	116.1	116.5	115.8	39
December	117.9	117.7	118.0	38
1972				
January	117.8	120.7	115.9	40
February	120.3	122.5	118.9	39
March	120.4	120.3	120.4	39
April	119.9	119.9	119.9	39
May	119.8	122.1	118.3	40
June	120.6	125.2	117.7	40
July	122.2	128.9	118.0	41
August	122.6	126.8	120.0	40
September	122.6	129.5	118.2	41
October	122.5	125.8	120.4	40
November	123.1	126.3	121.0	40
December	123.8	132.8	118.1	42
1973 2/				
January	127.2	142.2	117.7	43
February	130.4	147.7	119.5	44
March	134.9	157.9	120.4	45
April	137.0	158.1	123.7	45
May	138.2	157.9	125.7	44
June	140.4	166.4	123.9	46
July	141.5	171.2	122.7	47
August	153.0	205.9	119.5	52
September	150.7	180.9	131.6	47
October	149.9	174.4	134.4	45
November	151.2	169.2	139.8	43
December	152.7	172.3	140.3	44

1/ Retail cost of average quantities of farm-originated foods purchased annually per household in 1960-61 by urban wage-earner and clerical worker families and workers living alone, calculated from retail prices collected by the Bureau of Labor Statistics. Beginning November 1971, the retail cost is based on the index of domestically produced farm foods--a component of the Consumer Price Index published by the Bureau of Labor Statistics. Indexes may be converted to dollar totals by multiplying by the following amounts for 1967: retail cost, $1,080.64; farm value, $419.07; and farm-retail spread, $661.57. Additional historical data are published in Farm-Retail Spreads for Food Products, Misc. Pub. 741, January 1972.

2/ Preliminary.

Table 2 .--The market basket of farm foods by product group: Retail cost, farm value and farm-retail spread, fourth quarter 1973 with comparisons 1/.

Item	IV 1973	Change from:			
		Previous quarter		Year ago	
	Dollars	Dollars	Percent	Dollars	Percent
	Retail cost				
Market basket	1634.65	30.97	1.9	304.02	22.8
Meat	545.85	-14.39	-2.6	112.94	26.1
Dairy	276.40	30.55	12.4	46.64	20.3
Poultry	69.32	-19.52	-22.0	18.65	36.8
Eggs	62.80	- .06	- .1	20.99	50.2
Bakery and cereal	244.09	32.67	15.5	51.97	27.1
Fresh fruits	68.68	- 3.47	- 4.8	8.41	14.0
Fresh vegetables	100.77	-16.29	-13.9	10.57	11.7
Processed fruits and vegetables	142.73	8.17	6.1	13.74	10.7
Fats and oils	59.49	9.91	20.0	14.70	32.8
Miscellaneous	64.52	3.40	5.6	5.41	9.2
	Farm value				
Market basket	720.67	-58.84	-7.5	182.96	34.0
Meat	319.85	-61.42	-16.1	69.25	27.6
Dairy	143.82	19.74	15.9	33.85	30.8
Poultry	38.02	-19.95	-34.4	13.26	53.6
Eggs	44.18	- 1.99	- 4.3	18.36	71.1
Bakery and cereal	59.86	9.39	18.6	23.71	65.6
Fresh fruits	20.45	- .95	- 4.4	1.63	8.7
Fresh vegetables	30.39	-10.52	-25.7	2.50	9.0
Processed fruits and vegetables	27.90	2.34	9.2	3.46	14.2
Fats and oils	24.18	3.55	17.2	14.15	141.1
Miscellaneous	12.02	.97	8.8	2.79	30.2
	Farm-retail spread				
Market basket	913.98	89.81	10.9	121.06	15.3
Meat	226.00	47.03	26.3	43.69	24.0
Dairy	132.58	10.81	8.9	12.79	10.7
Poultry	31.30	.43	1.4	5.39	20.8
Eggs	18.62	1.93	11.6	2.63	16.4
Bakery and cereal	184.23	23.28	14.5	28.26	18.1
Fresh fruits	48.23	-2.52	-5.0	6.78	16.4
Fresh vegetables	70.38	-5.77	-7.6	8.07	13.0
Processed fruits and vegetables	114.83	5.83	5.3	10.28	9.8
Fats and oils	35.31	6.36	22.0	.55	1.6
Miscellaneous	52.50	2.43	4.9	2.62	5.3

1/ The market basket contains the average quantities of farm-originated foods purchased annually per household in 1960-61. Retail cost is calculated from U.S. average retail prices collected by the Bureau of Labor Statistics. Farm value is payment to farmer for equivalent quantities of farm products minus imputed value of byproducts obtained in processing. Quarterly data are annual rates. Additional data are shown in tables at the back of this report.

cost for 1972 (table 3). This was much above the 5 percent rise from 1971 to 1972 and was the largest annual increase since a 21 percent rise from 1946 to 1947.

Strong demand and a tight supply situation boosted retail prices for all market basket foods in 1973, particularly poultry, eggs, meats, and fresh vegetables. Frozen orange juice concentrate showed the least rise for the year, averaging 25.1 cents per 6-ounce can, up only 0.1 cent from 1972.

During 1973, the retail cost of market basket foods peaked in August after the lifting of the price ceiling on July 18. Following a slight decrease in both September and October, food costs rose again and by December averaged 23 percent above a year earlier.

With the sharp 1973 rise, the retail cost of farm foods averaged 42 percent above 1967, compared with an increase of 31 percent for all other items in the Consumer Price Index. Traditionally, the rise in food prices has not been as great as for other goods and services purchased by consumers.

Farm Value: The farm value of foods in the market basket jumped a third in 1973 as prices received for practically all food commodities increased substantially. However, higher returns for animal products accounted for about three-fourths of the total increase. Returns for meat animals rose a third, poultry and eggs 77 percent, and milk 14 percent. Returns for crop products were also up substantially; food grains and oilseeds around 50 percent; and fresh fruits and vegetables almost a third. The increase in returns to farmers accounted for about three-fourths of the almost $227 rise in the retail cost of the farm-food market basket last year.

The farm value for the market basket rose sharply in the first 8 months of 1973, particularly in August after retail price ceilings for most products were lifted allowing the pass-through of higher products costs. Farm value jumped 20 percent from July to August but dropped sharply in September and in December was about 16 percent below the August peak. The August crescendo resulted from reduced supplies of major items as producers elected to restrict production because of unfavorable cost-price conditions resulting in part from the freeze on beef and pork prices beginning March 28 and the general price freeze initiated June 8.

Returns to farmers for market basket foods have risen 67 percent since 1967. More than half of this increase occured in 1973. Other significant increases were in 1969 and 1972 when the farm value increased about 9 percent each year.

Farm-Retail Spreads: Widening farm-retail spreads accounted for less than one-fourth of the rise in the retail cost of market basket foods in 1973. The spread between the retail cost and the farm value increased 6.5 percent in 1973 compared with 2.1 percent in 1972. Spreads widened 7.5 percent in 1970. Marketing spreads have increased each year since 1950, except in 1960 and 1965. Annual average increases in the 1960's were only about half those of the 1950's, averaging 1.4 percent compared with 2.7 percent.

Marketing spreads varied greatly during the year. They widened almost 7 percent at a fairly steady pace during the first 5 months. During the price freeze in the summer, marketing margins were squeezed between ceiling prices and rising prices received by farmers for raw agricultural products. In August the squeeze became acute as the sudden rise in farm prices outpaced the rise at retail. Margins rebounded sharply in September as farm value plunged, and continued to widen throughout the remainder of the year as food marketing firms attempted to recover from the effect of the price freeze. Farm-retail spreads rose 17 percent from August to December.

Operating costs of food marketing firms increased in 1973, continuing a long-term trend. Although limited by Phases III and IV, hourly earnings of employees in food marketing firms averaged an estimated $3.65, up 6 percent from 1972. Improvements in output per man-hour may have offset part of the rise in wages last year. Prices of containers, packaging materials, and other intermediate goods and services purchased by food marketing firms increased more than usual in 1973. The price of energy (fuel, power, and light) jumped about 9 percent from the third to the fourth quarter.

After tax profits of food manufacturing corporations averaged 2.4 percent of sales in the first three quarters of 1973, about the same as in the same period of 1972, according to data compiled by the Federal Trade Commission and the Securities Exchange Commission. After tax profits of 15 leading retail food chains averaged 0.5 percent of sales, also about the same as a year earlier, but considerably below the 1.1 to 1.2 percent level prevailing during most of the 1960's.

Farmer's Share: Because returns to farmers rose faster than retail prices last year, the farmer's share of the dollar consumers spent for market basket foods increased 6 cents to 46 cents—the largest share in 20 years. It averaged 38 and 39 cents in 1970 and 1971 respectively. In the 1960's the farmer's share ranged from 37 to 41 cents.

Outlook

Retail food prices are expected to rise in the first half of 1974 reflecting both higher prices for products from U.S. farms and widening marketing margins. Retail prices may stabilize around midyear and possibly decrease slightly in the fall if farm prices ease as expected. Increased foreign and domestic demand and reduced supplies of several major food commodities will strengthen farm prices until the more than seasonal increases in supplies, as

Table 3 1/--The market basket of farm foods by product group: Retail cost, farm value and farm-retail spread, annual 1972-73

Item	1973	1972	Change from: 1972 to 1973	
	Dollars	Dollars	Dollars	Percent
	Retail cost			
Market basket	1537.30	1310.82	226.48	17.3
Meat	523.10	422.54	100.56	23.8
Dairy	248.98	228.83	20.15	8.8
Poultry	72.05	50.60	21.45	42.4
Eggs	56.43	37.97	18.46	48.6
Bakery and cereal	213.71	192.07	21.64	11.3
Fresh fruits	66.96	58.82	8.14	13.8
Fresh vegetables	109.43	88.17	21.26	24.1
Processed fruits and vegetables	135.16	127.97	7.19	5.6
Fats and oils	50.04	45.21	4.83	10.7
Miscellaneous	61.44	58.64	2.80	4.8
	Farm value			
Market basket	699.87	524.14	175.73	33.5
Meat	331.83	246.33	85.50	34.7
Dairy	123.85	108.86	14.99	13.8
Poultry	42.64	24.59	18.05	73.4
Eggs	39.25	21.69	17.56	81.0
Bakery and cereal	47.36	31.93	15.43	48.3
Fresh fruits	21.65	17.50	4.15	23.7
Fresh vegetables	38.47	28.12	10.35	36.8
Processed fruits and vegetables	25.58	24.09	1.49	6.2
Fats and oils	18.49	12.04	6.45	53.6
Miscellaneous	10.75	8.99	1.76	19.6
	Farm-retail spread			
Market basket	837.43	786.68	50.75	6.5
Meat	191.27	176.21	15.06	8.5
Dairy	125.13	119.97	5.16	4.3
Poultry	29.41	26.01	3.40	13.1
Eggs	17.18	16.28	.90	5.5
Bakery and cereal	116.35	160.14	6.21	3.9
Fresh fruits	45.31	41.32	3.99	9.7
Fresh vegetables	70.96	60.05	10.91	18.2
Processed fruits and vegetables	109.58	103.88	5.70	5.5
Fats and oils	31.55	33.17	- 1.62	- 4.9
Miscellaneous	50.69	49.65	1.04	2.1

1/ The market basket contains the average quantities of farm-originated foods purchased annually per household in 1960-61. Retail cost is calculated from U.S. average retail prices collected by the Bureau of Labor Statistics. Farm value is payment to farmer for equivalent quantities of farm products minus imputed value of byproducts obtained in processing. Quarterly data are annual rates. Additional data are shown in tables at the back of this report.

currently anticipated, become available in the third and fourth quarters. Marketing margins for assembling, processing, transporting, and distributing foods from U.S. farms will continue to increase as the year progresses but at a much slower pace than last fall. Operating costs incurred by marketing firms are expected to continue to rise, although uncertainty prevails concerning the magnitude of possible cost increases for labor, energy, transportation, and packaging. For the year, the annual increase in the farm retail spread may well exceed the 1973 annual increase of 6.5 percent.

Commodity Highlights

Beef: Retail prices for Choice beef averaged $1.35 per pound in the fourth quarter of 1973, down almost 7 cents from the previous quarter (table 4). The decrease only partially reflected the decrease in the net farm value of the quantity of live cattle equivalent to the retail units. The farm value dropped by 18 cents to 81 cents. As a result, the farm-retail spread widened 11 cents as marketing firms attempted to recoup from the effect of the price freeze. Marketing spreads for Choice beef shrank to 36 cents in August as prices for cattle rose sharply before retail ceiling prices for beef were lifted on September 10. In September, farm-retail spreads widened to a record 53 cents as farm values dropped sharply. In the fourth quarter the farm-retail spread edged even higher. Both the carcass-retail and the farm-carcass spreads widened sharply in the fourth quarter when compared with the first half of 1973.

Compared with a year earlier, the retail price for Choice beef was up 22 cents per pound. Increases in the farm value shared about equally with increases in the farm-retail spread. However, the carcass-retail spread, which includes the retail margin, increased 7.6 cents compared with an increase of 3.5 cents in the farm-carcass spread which is mainly the packer's margin for the meat portion of the animal. In the fourth quarter, commercial slaughter of beef was about 3 percent below a year earlier.

Prices for Choice steers in 7 leading Midwestern markets and California (used in computing the farm value for Choice beef) averaged $40.24 per hundredweight in the fourth quarter, compared with .49.09 in the third quarter and $35.24 in the fourth quarter of 1972.

Note: Wholesale price quotations for carcass beef were not available in August 1973 during the freeze period. Many retailers, in order to secure a supply of beef, bought cattle outright and contracted for custom slaughter, thereby bypassing normal marketing channels. To fill the void in the data series, the carcass value for Choice beef was estimated to be 111.8 cents for August 1973. It was derived from ceiling prices paid by retailers for carcass meat estimated by AMS Market News from unpublished data. In addition, a charge for custom slaughter, estimated by industry sources, was added to the ceiling price ot obtain the estimated carcass value. Custom slaughter rates were estimated at around $15 per head or 3.4 cents per retail pound. The estimated carcass value for August 1973 may not be comparable with other carcass values. However, it is considered the best available for analytical purposes. Third quarter and annual data for 1973 shown in table 4 are based on the estimated carcass value for August.

Pork: Farm-retail spreads for pork increased to record levels in the fourth quarter as marketing firms attempted to recoup from margins that were squeezed during and immediately following the price freeze. The net farm value of the quantity of live hog equivalent to a pound of pork sold at retail averaged 72 cents in the fourth quarter, down 14 cents from the previous quarter. The retail price of pork cuts averaged $1.16 per pound in the fourth quarter, down 6 cents from the previous quarter. As a result, marketing margins widened 8 cents to an unprecedented level of 44 cents in the fourth quarter. Practically all of this large rise was in the wholesale-retail spread which includes the retailer's margin.

Pork prices at all market levels were much higher in the fourth quarter of 1973 than a year earlier. The retail price for pork cuts increased 32 percent while the farm value was up almost 40 percent. The farm-retail spread widened 22 percent. The wholesale-retail segment of the spread increased 75 percent and the farm-wholesale segment decreased 21 percent.

Bread: The December 1973 retail price of a 1-pound loaf of bread at 31.9 cents was 0.4 cent higher than in November, and 5.4 cents above July (table 6). Over the past year, retail bread prices have increased about 28 percent. The sharp price rise occurred as (1) the economy entered Phase IV of the Economic Stabilization Program, which permitted cost pass-throughs, and (2) farm prices of wheat and other bread ingredients increased significantly. Increases in both farm value and marketing margins at every stage in the marketing process gave an extra boost to retail prices.

The retail price of a 1-pound loaf of white bread averaged 27.6 cents in 1973 (table 6). This was an increase of 2.9 cents, or nearly 12 percent over 1972. Farm value of ingredients increased 1.7 cents and the farm-retail spread widened 1.2 cents. This was the second year in succession that farm value increased more than marketing spreads, a deviation from the pattern of earlier years which showed marketing charges increasing while the farm value of ingredients tended to remain stationary.

The rise in retail bread prices per 1-pound loaf during 1973 breaks down into the following changes:

	Dec. 1972-July 1973	July-Dec. 1973	Total
	Cents	*Cents*	*Cents*
Retailer	0.9	0.2	1.1
Baker-wholesale	.8	2.0	2.8
Miller	0	.4	.4
Other marketing items	.3	-.3	0
Farmer	-.5	3.1	2.6
Total increase	1.5	5.4	6.9

Although farm prices rose significantly for the second year, farm value increases for all ingredients accounted for about one-third of the retail price rise in 1973 and marketing charges for the balance. In 1973, the annual average farm value of 5.5 cents was one-fifth of the retail price, the highest since 1954.

The flour miller's spread increased for the second year, averaging 1 cent, the highest on record. This spread had not trended up over the years like the total farm-retail spread.

The baker-wholesaler's price spread averaged 14 cents in 1973, slightly higher than in 1972. However, this spread increased sharply in the last half of last year and in December was 2.8 cents higher than a year earlier.

The retail demand for bread is relatively inelastic. The retail price spread tends to widen, maintaining a relatively constant percentage of the retail price, as wholesale bread prices rise. The spread averaged about 20 percent of the retail price in 1973.

Table 4.--Beef, pork, and lamb: Retail price, carcass value, farm value, farm-retail spread, and farmer's share of retail price, annual 1969-73, quarterly 1972-73

Date	Retail price per pound 1/	Carcass value 2/	Gross farm value 3/	Byproduct allowance 4/	Net farm value 5/	Farm-retail spread			Farmer's share
						Total	Carcass-retail	Farm-carcass	
	Cents								Percent
Beef, Choice grade									
1969	96.2	68.7	66.9	4.7	62.2	34.0	27.5	6.5	65
1970	98.6	68.3	66.3	4.8	61.5	37.1	30.3	6.8	62
1971	104.3	75.6	72.4	4.5	67.9	36.4	28.7	7.7	65
1972	113.8	80.0	79.9	7.4	72.5	41.3	33.8	7.5	64
1973	135.5	6/ 98.1	100.2	10.1	90.1	45.4	37.4	8.0	66
1972									
Jan.-Mar.	114.4	81.4	79.4	5.7	73.7	40.7	33.0	7.7	64
Apr.-June	112.3	81.2	80.6	7.0	73.6	38.7	31.1	7.6	66
July-Sept.	115.3	79.8	80.6	7.9	72.7	42.6	35.5	7.1	63
Oct.-Dec.	113.2	77.7	79.0	8.9	70.1	43.1	35.5	7.6	62
1973									
Jan.-Mar.	129.2	95.0	96.8	9.4	87.4	41.8	34.2	7.6	68
Apr.-June	135.8	100.0	102.9	10.0	92.9	42.9	35.8	7.1	68
July-Sept.	141.8	6/105.4	110.6	11.6	99.0	42.8	36.4	6.4	70
Oct.-Dec.	135.1	92.0	90.4	9.5	80.9	54.2	43.1	11.1	60
Pork									
1969	74.3	58.5	45.5	3.2	42.3	32.0	15.8	16.2	57
1970	78.0	58.7	42.9	3.4	39.5	38.5	19.3	19.2	51
1971	70.3	52.1	35.0	2.7	32.3	38.0	18.2	19.8	46
1972	83.2	65.2	51.4	3.5	47.9	35.3	18.0	17.3	54
1973	109.9	87.1	78.6	6.8	71.8	38.0	22.7	15.3	65
1972									
Jan.-Mar.	79.0	61.3	47.1	3.3	43.8	35.2	17.7	17.5	55
Apr.-June	79.9	61.0	47.7	3.4	44.3	35.6	18.9	16.7	55
July-Sept.	86.1	67.1	55.3	3.7	51.6	34.5	19.0	15.5	60
Oct.-Dec.	87.7	71.5	55.4	3.7	51.7	36.0	16.2	19.8	59
1973									
Jan.-Mar.	98.1	79.9	68.6	4.9	63.7	34.4	18.2	16.2	65
Apr.-June	103.1	79.3	71.0	6.1	64.9	38.2	23.8	14.4	63
July-Sept.	121.8	101.5	95.0	8.8	86.2	35.6	20.3	15.3	71
Oct.-Dec.	116.1	87.7	79.7	7.6	72.1	44.0	28.4	15.6	62
Lamb, Choice grade									
1969	100.7	74.8	66.9	7.6	59.3	41.4	25.9	15.5	59
1970	105.5	73.8	65.1	6.4	58.7	46.8	31.7	15.1	56
1971	109.9	75.1	63.1	5.9	57.2	52.7	34.8	17.9	52
1972	118.3	79.7	70.5	7.5	63.0	55.3	38.6	16.7	53
1973	140.9	91.2	86.6	12.9	73.7	67.2	49.7	17.5	52
1972									
Jan.-Mar.	114.6	77.7	67.1	6.5	60.6	54.0	36.9	17.1	53
Apr.-June	116.9	81.6	71.6	7.4	64.2	52.7	35.3	17.4	55
July-Sept.	121.2	82.8	73.9	7.8	66.1	54.1	37.4	16.7	55
Oct.-Dec.	122.6	76.5	69.4	8.3	61.1	61.5	46.1	15.4	50
1973									
Jan.-Mar.	131.8	89.3	87.3	12.8	74.5	57.3	42.5	14.8	57
Apr.-June	138.7	89.5	85.4	13.4	72.0	66.7	49.2	17.5	52
July-Sept.	148.2	98.9	91.0	13.0	78.0	70.2	49.3	20.9	53
Oct.-Dec.	145.0	87.0	82.9	12.6	70.3	74.7	58.0	16.7	48

1/ Estimated weighted average price of retail cuts. 2/ For quantity equivalent to 1 lb. of retail cuts: Beef: 1.41 lb. of carcass beef; pork, 1.07 lb. of wholesale cuts; lamb, 1.18 lb. of carcass lamb.
3/ Payment to farmer for quantity of live animal equivalent to 1 lb. of retail cuts: Beef, 2.28 lb.; pork, 1.97 lb.; lamb, quantity varies by months from 2.42 lb. in May to 2.48 lb. in October. 4/ Portion of gross farm value attributed to edible and inedible byproducts. 5/ Gross farm value minus byproduct allowance. 6/ Includes estimated carcass value for August 1973. See note in MTS-192.

Table 5 .--Changes in retail price, farm value, and farm-retail spread for selected market basket foods, fourth quarter 1973.

Item	IV 1973	Change from: Previous quarter	Change from: Year ago	IV 1973	Change from: Previous quarter	Change from: Year ago
	Cents	Percent	Percent	Cents	Percent	Percent
	Butter, pound			Cheese, American, ½ pound		
Retail price	102.6	12.5	17.7	66.5	10.8	20.7
Farm value	69.7	9.4	18.3	35.9	17.7	45.3
Farm-retail spread	32.9	19.6	16.3	30.6	3.7	.7
	Milk, sold in stores, ½ gallon			Chicken, frying, pound		
Retail price	72.9	12.7	21.9	55.3	-26.2	33.3
Farm value	38.4	13.6	25.9	30.0	-38.9	49.3
Farm-retail spread	34.5	11.7	17.7	25.3	- 1.9	18.2
	Eggs, large grade A, dozen			Corn flakes, 12 ounces		
Retail price	86.3	- 1.4	49.3	33.7	3.1	9.4
Farm value	60.7	- 5.6	70.0	4.0	- 2.4	90.5
Farm-retail spread	25.6	10.3	15.8	29.7	3.8	3.5
	Apples, pound			Oranges, dozen		
Retail price	29.7	-14.4	24.8	113.6	5.6	18.8
Farm value	11.2	6.7	31.8	24.2	- 7.3	44.0
Farm-retail spread	18.5	-23.6	20.9	89.4	9.7	13.5
	Lettuce, head			Tomatoes, pound		
Retail price	33.9	-26.5	-10.1	45.2	- 5.4	- 6.6
Farm value	8.6	-34.8	-32.3	17.5	-15.0	0
Farm-retail spread	25.3	-23.1	1.2	27.7	1.8	-10.4
	Orange juice, frozen, 6 oz. can			Margarine, pound		
Retail price	25.2	1.2	1.2	44.8	18.8	36.2
Farm value	8.4	0	-20.8	18.6	16.2	177.6
Farm-retail spread	16.8	1.8	17.5	26.2	20.7	0
	Potatoes, 10 pounds			Peas, frozen, 10 ounces		
Retail price	130.1	-21.1	33.7	24.5	2.9	7.5
Farm value	34.4	-42.8	37.1	4.2	5.0	10.5
Farm-retail spread	95.7	- 8.6	32.5	20.3	2.5	6.8

1/ Data for additional foods are shown in tables at back of this report.

TABLE 6. --WHITE PAN BREAD: ESTIMATED RETAIL AND WHOLESALE PRICE OF A 1-POUND LOAF; RETAILER'S, WHOLESALER'S, MILLER'S AND OTHER SPREADS; FARM VALUE OF INGREDIENTS; FLOUR AND WHEAT PRICES AND RELATED DATA, BY QUARTERS, FOR OCTOBER-DECEMBER AND ANNUAL AVERAGES, 1973

ITEM	UNIT	I	II	III	OCT.	NOV.	DEC.	IV	1973
RETAIL PRICE 1/	CENTS PER LOAF	25.1	26.2	27.7	30.6	31.5	31.9	31.3	27.6
RETAIL SPREAD 2/	"	4.7	5.3	5.3	6.0	6.7	5.8	6.1	5.4
WHOLESALE PRICE 3/	"	20.4	20.8	22.4	24.6	24.8	26.1	25.2	22.2
BAKER-WHOLESALER SPREAD 4/	"	13.4	13.5	13.6	15.1	15.3	15.9	15.5	14.0
COST TO BAKER									
ALL INGREDIENTS 5/	"	7.0	7.4	8.8	9.5	9.5	10.2	9.7	8.2
FLOUR 6/	"	4.8	4.9	6.1	6.7	6.7	7.5	7.0	5.7
MILL SALES VALUE OF FLOUR 6/	"	4.5	4.7	5.9	6.4	6.5	7.2	6.7	5.5
MILLER'S FLOUR SPREAD 7/	"	0.9	0.7	1.0	1.2	1.3	1.3	1.3	1.0
COST OF WHEAT TO MILLER 8/	"	3.6	4.0	4.9	5.2	5.1	5.9	5.4	4.5
OTHER SPREADS 9/	"	1.5	1.9	1.9	1.9	1.9	1.7	1.8	1.7
FARM VALUE *									
ALL INGREDIENTS 10/	"	4.6	4.8	5.9	6.4	6.3	7.2	6.6	5.5
WHEAT 11/	"	3.4	3.6	4.5	4.9	4.8	5.6	5.1	4.1
FLOUR PRICES 12/ *									
F.O.B. MILL	DOL. PER CWT.	7.13	7.37	9.28	10.15	10.21	11.40	10.59	8.59
DELIVERED TO BAKERS	"	7.52	7.81	9.72	10.60	10.66	11.82	11.03	9.02
FLOUR SALES 12/									
SOLD IN BAGS	PERCENT	19.	21.	13.	21.	24.	12.	19.	18.
PRICE DIFFERENTIAL FOR BAGS	CENTS PER CWT.	17.	18.	18.	22.	23.	22.	22.	19.
WHEAT PRICES *									
FARM DELIVERY POINT 13/	DOL. PER BU.	2.83	2.93	3.66	4.03	4.03	4.58	4.21	3.41
DELIVERED TO MILLERS 14/	"	3.00	3.23	3.98	4.26	4.27	4.85	4.46	3.67

1/ BASED ON PRICES REPORTED BY BUREAU OF LABOR STATISTICS.
2/ SPREAD BETWEEN RETAIL AND WHOLESALE PRICES. THIS SPREAD IS COMPUTED FROM UNROUNDED DATA AND MAY NOT REFLECT THE DIFFERENCE BETWEEN PRICES AS ROUNDED.
3/ ESTIMATED FROM BLS PRICES AND TRADE DATA.
4/ SPREAD BETWEEN WHOLESALE PRICE AND COST TO BAKER OF ALL INGREDIENTS. THIS SPREAD IS COMPUTED FROM UNROUNDED DATA AND MAY NOT REFLECT THE DIFFERENCE BETWEEN PRICE AND COST DATA AS ROUNDED.
5/ COST OF FLOUR PLUS SHORTENING, NONFAT DRY MILK, SUGAR AND OTHER MINOR NONFARM PRODUCED INGREDIENTS.
6/ COST OR SALES VALUE OF FLOUR (0.6329 LB.) USED PER POUND OF BREAD.
7/ SPREAD BETWEEN MILL SALES VALUE OF FLOUR AND COST OF WHEAT TO MILLER. THIS SPREAD IS COMPUTED FROM UNROUNDED DATA AND MAY NOT REFLECT THE DIFFERENCE BETWEEN MILL SALES VALUE AND COST AS ROUNDED.
8/ COST OF WHEAT (.01445 BU.) INCLUDING MARKETING CERTIFICATE.
9/ CHARGES FOR TRANSPORTING, HANDLING, STORING ALL INGREDIENTS, FOR PROCESSING INGREDIENTS OTHER THAN FLOUR AND COST OF NONFARM PRODUCED INGREDIENTS SUCH AS YEAST, SALT, AND MALT EXTRACT. THIS SPREAD IS A RESIDUAL FIGURE COMPUTED FROM DATA AS ROUNDED.
10/ RETURNS TO FARMERS FOR WHEAT, INCLUDING AN ALLOWANCE FOR THE MARKETING CERTIFICATE, LARD, SHORTENING, NONFAT DRY MILK, AND SUGAR USED IN A 1-POUND LOAF.
11/ RETURNS TO FARMERS FOR WHEAT, INCLUDING THE CERTIFICATE, LESS IMPUTED VALUE OF MILLFEED BYPRODUCTS.
12/ BASED ON MONTHLY SALES AND PRICES OF BREAD-TYPE FLOUR REPORTED BY A SAMPLE OF FLOUR MILLING FIRMS.
13/ WEIGHTED AVERAGE FOR HARD WINTER AND SPRING WHEAT IN THE 10 MAJOR WHEAT PRODUCING STATES; INCLUDES ALLOWANCE FOR MARKETING CERTIFICATE.
14/ INCLUDES ALLOWANCE FOR MARKETING CERTIFICATE.

* WHEAT AND FLOUR PRICES DO NOT INCLUDE ALLOWANCE FOR MARKETING CERTIFICATE SINCE JULY 1, 1973, EFFECTIVE DATE OF REPEAL.

COMMODITY ECONOMICS DIVISION, ERS

THE FUEL COST OF FOOD

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ABSTRACT

In 1971, fuel costs in all stages of production and marketing of food represented about 5 to 6 percent of the retail food price. For every doubling in fuel costs at each stage retail food prices could increase by more than 7 up to 13 percent holding other factors constant. A differential price impact upon groups of foods might be expected from an increase in fuel costs through the sequential stages of production. Data suggest varied responses by farmers producing different products and by firms processing those food products.

Keywords: Fuel costs, food, prices.

Aside from the availability of fuel for food production and marketing, two other critical questions for the food industry and consumers spring from the fuel shortage. First, what will be the impact on food costs, and second, how will the increased costs be distributed among different foods? There is no simple answer. Neither can the answers be very precise.

Energy costs make up a significant part of total costs for many foods. We use more energy to produce and market some foods than we use for others. By comparing types of farms and food processing, we can gain insight into the relative impact of rising fuel costs upon different segments of the food industry.

Fuel Costs of Farmers

Farmers, as critical users of fuel, can expect higher production costs as fuel prices rise. But how much more? Will the difference be so great that we might expect farmers to change their input-output decisions or even to change enterprises?

To be most meaningful, a cost must be considered as part of the total or be compared with something. The relative importance of energy costs may be seen by comparing selected cost and return data as shown in table 7 for Illinois farms. While there is considerable variation between individual farms in any group and Illinois farms may differ from farms in other States, these farm records provide insights for understanding the differential impact which might be expected by commercial farmers.

Fuel costs for four types of Illinois farms represent less than 5 percent of total cash sales, and less than 2 percent for beef cattle farms. However, this measure understates the significance of fuel costs and their impact upon returns to farmers. Comparison of fuel costs with cash farm expenses, with cash balances,[1] and with labor and management earnings reveals that rising fuel costs would have considerable effect upon returns.

If fuel costs were doubled, returns to labor and management for Illinois dairymen would be reduced almost 40 percent, or twice the percentage reduction for grain farmers. Percentagewise, cash balances would be reduced almost 80 percent more for dairymen than for grain farmers and 40 percent more than for meat producers.

Such marked changes in the relative well-being of producers of different products would likely bring about differential changes in production and in product prices. For example, in response to fuel price increases and with other things being equal, we

[1]Cash balance, the difference between cash sales and cash expenses, is used as a proxy for "value added" at the farm level.

Table 7--Relationship of fuel costs to returns for four types of Illinois farms, average per farm, 1971

Item	Unit	Type of farm			
		Dairy	Beef-cattle	Hog	Grain
Farms	No.	322	322	786	2,225
Cash sales of product	Dol.	50,277	143,029	74,642	68,006
Cash expenses	Dol.	37,383	123,206	58,397	43,184
Cash balance (value added) 1/	Dol.	12,894	19,823	16,245	24,822
Labor and management earnings	Dol.	6,094	10,031	8,095	14,071
Gasoline and oil expenses	Dol.	1,579	2,129	1,172	2,162
Electricity as a proportion of gas and oil 2/	Percent	39	20	57	17
Fuel portion of hired transport as proportion of farm gas and oil 3/	Percent	13	9	5	4
Adjusted fuel and energy	Dol.	2,400	2,746	1,899	2,616
Adjusted purchased fuel as proportion of:					
Cash sales	Percent	4.8	1.9	2.5	3.8
Cash expenditures	Percent	6.4	2.2	3.3	6.1
Cash balance (value added)	Percent	18.6	13.9	11.7	10.5
Labor and management earnings	Percent	39.4	27.4	23.5	18.6

1/ Cash balance, the difference between cash sales and cash expenses, is considered a proxy for "value added" at the farm level.

2/ Adjustment based upon 1971 farm records for Minnesota and Iowa.

3/ Adjustment for hired transport based upon 1971 farm records for Minnesota and Iowa. Fuel portion of hired transport and freight based upon unpublished ERS summary of records covering 12.4 million truck-miles.

should expect milk production to decline and farm milk prices to rise relatively more than meat or grain at the farm level. This probability is even greater because milk production has already been decreasing during the past year as resources withdrew from dairying.

Cash expenses continue to become more significant to farmers as they purchase increasing proportions of farm inputs. In 1971, Illinois dairy farmers spent about 75 cents of each sales dollar for purchased inputs. A change in the price of inputs therefore becomes critical in its effect upon the cash balance and labor earnings of farmers.

While fuel costs for supplying farm inputs are not available, an approximation can be made by using the figure for all manufactures of 1.4 percent of value of shipments. This figure is somewhat low in that it does not include fuel for transportation of raw materials or products. An adjustment could have been made to incorporate this, and any other additional fuel cost, but was not done in this instance. Doubling the fuel cost for producing farm inputs would increase cash farm expenses but probably would not cause much differential impact between milk, meat or grain producers. However, farms of different types and location may use quite a different mix of inputs. Processing and transporting these inputs may have substantially different energy requirements.

Food Industry Fuel Costs

Farm products must be processed and distributed to consumers by firms whose fuel costs also are increasing. Some of the more basic comparisons are shown for all manufactures and selected food manufactures in table 8.

Table 8--Selected comparisons of fuel use 1/ by food industries, 1967 and 1971

Industry	Value added per $1 purchased fuel 2/		Value shipments per $1 purchased fuel		Fuel purchased per establishment	Fuel purchased per production worker		Change, 1967-1971		
	1967	1971	1967	1971	1967	1967	1971	Fuel purchased	Dollar value added	Dollar value of shipments
	Dollars							Percent		
All manufacturers	34	30	72	64	24,721	551	815	36	20	20
Food and kindred	40	38	127	115	20,346	590	829	35	28	23
Meat	39	38	236	199	18,519	366	519	44	40	21
Dairy	30	31	110	119	18,859	1,088	1,408	6	12	14
Butter	11	NA	92	NA	19,259	1,625	NA	NA	-16	-7
Cheese	18	NA	139	NA	11,988	741	NA	NA	86	50
Condensed and evap.	25	NA	83	NA	52,234	1,152	NA	NA	17	24
Ice cream and frozen	33	NA	86	NA	14,471	891	NA	NA	7	10
Fluid	35	NA	118	NA	19,103	1,099	NA	NA	6	6
Canned, cured, frozen	42	38	108	97	24,178	376	461	46	31	31
Grain mill	33	29	113	94	27,358	1,125	1,560	35	19	12
Bakery	66	62	122	111	12,073	332	451	26	19	14
Beverage	69	60	131	121	15,929	614	978	57	36	45
Miscellaneous food	30	30	101	93	21,876	1,043	1,498	38	37	27

NA = not available.

1/ Fuel use includes purchased fuel and electrical energy.

2/ Value added by manufacture as defined and reported by Census of Manufactures.

SOURCE OF DATA: Census of manufactures publications: "1967 Census of Manufactures"; special publications "Fuel and Electrical Energy Consumed"; "General Summary"; "Annual Survey of Manufactures 1971"; "Value of product shipments"; "General Statistics for Industry Groups and Industries 1971".

Overall, the food industry uses less fuel per dollar of value added by manufacture than do all manufactures. Dairy processors use more fuel per dollar of value added (or add fewer dollars value per dollar of fuel purchased) than do any of the other major food industries except grain millers. However, from 1967 to 1971, total fuel and electrical energy purchased by the dairy products industry increased much less than for the other industries. Part of this was due to the changing structure of the dairy processing industry, and especially to the closing of many plants in the butter industry, which are relatively heavy fuel users.

Dairy processors, while using more fuel per dollar of value added by manufacture than most other food industries, were the only industry group in the period 1967-71 to have increased the value added per dollar of fuel purchased. Dairy was also the only group increasing value of shipments per dollar of fuel purchased.

Classification and allocation problems become more difficult as the industries are broken down into subindustries. Despite the lower degree of accuracy, the differences in the importance of fuel costs in milk processing do appear significant. The butter subindustry spends the equivalent of almost 10 percent of its value added by manufacture on fuel. Fluid milk processors spend less than one-third this proportion. At the processing level, increasing fuel costs would hit the butter subindustry the hardest, followed in order by cheese, condensed and evaporated, ice cream and frozen, and finally by fluid milk products. Lower returns would affect their relative ability to maintain resources in processing.

Effect on Retail Prices

Processed foods must be moved and sold to the consumer. Wholesaling and retailing functions require additional energy. Due to the complexity of the joint costs involved, no attempt was made to differentiate as to the energy use of different products at the distribution level. Instead, we used the same percentage for margins, 25 percent of sales, and for fuel cost, 2 percent of sales. These levels for wholesaling and retailing are in line with data in current ERS studies of marketing costs. Data were not available to allocate costs to retail departments or products. However, due to refrigeration, the energy used in distributing $1 worth of dairy products is probably greater than is used to distribute $1 of meat or grain products.

Initially, the consumer might expect quite a different relative retail price change than that experienced by the producers. The dollar spent for the 3 groups of foods at retail is divided up quite differently at the processing and farm levels. In table 9, the dollar of retail sale is broken down by functional level backward through processing and farm production to the purchased farm inputs, showing the value of shipments, value added, cost of inputs (materials), and the fuel cost at each stage. The purchased inputs for each stage are considered as the sales from the preceding stage. This process gives a fair approximation of an impact upon purchased inputs, although several refinements could be made.

Assuming no change in production processes or quantity of fuel used the total impact which could be expected is illustrated in table 10 based upon doubling the price of fuel under the functional breakdown shown in table 9. This breakdown starts with the purchased inputs and works forward through the production-marketing system. Such a change in the price of fuel would increase the retail price of each food. Doubling the cost of fuel at each stage of production, processing, and distribution and passing this on as a higher price to the next stage would increase meat prices 4.8 percent at retail, grain mill products by 5.3 percent, and dairy products by 5.9 percent.

However, due to markup practices, retail prices would probably increase more than the actual amount of the added fuel cost. If the existing relationships, or percentage margins, between purchased inputs and sales were maintained at each level, price increases at retail would more than double, shown as alternative B. The price increase is the excess in retail sales at the new price above $1 (which was retail sales at the original price).

The price change of one food relative to others, and of foods relative to other goods, depends upon the amount of fuel used by each and the different pricing patterns. In 1971 fuel costs in all stages of food production and marketing represented 5 to 6 percent of the retail price of food. With these relationships and other factors held constant, every doubling of the fuel cost could increase retail prices of most foods by more than 7 percent and up to 13 percent. Dairy products probably would experience a relatively high price increase as dairy producers and processors are heavy fuel users.

Although the different proportions of cost or sales represented by fuel may not appear to be great, they may be enough so that we should expect different price changes and different responses by suppliers.

Table 9--Functional breakdown of fuel cost per dollar of retail sales of dairy, meat, and grain mill products, 1971

Item	Unit	Function or stage of production			
		Wholesale and retail 1/	Processing & distribution 2/	Farm production & shipping 3/	Purchased farm inputs 4/
Dairy products:					
Total sales or shipments	Cents	100.0	75.0	57.5	42.8
Cost of inputs	Cents	75.0	57.5	42.8	22.8
Value added	Cents	25.0	17.5	14.7	20.0
Fuel cost	Cents	2.0	.6	2.7	.6
Cumulative fuel cost	Cents	5.9	3.9	3.3	.6
Cumulative fuel cost as a proportion of sales	Percent	5.9	5.2	5.7	5/ 1.4
Meat products:					
Total sales or shipments	Cents	100.0	75.0	55.9	44.8
Cost of inputs	Cents	75.0	55.9	44.8	23.8
Value added	Cents	25.0	19.1	11.1	21.0
Fuel cost	Cents	2.0	.4	1.8	.6
Cumulative fuel cost	Cents	4.8	2.8	2.4	.6
Cumulative fuel as proportion of sales	Percent	4.8	3.7	4.3	5/ 1.4
Grain mill products:					
Total sales or shipments	Cents	100.0	75.0	51.9	33.0
Cost of inputs	Cents	75.0	51.9	33.0	15.4
Value added	Cents	25.0	23.1	18.9	17.6
Fuel cost	Cents	2.0	.8	2.0	.5
Cumulative fuel cost	Cents	5.3	3.3	2.5	.5
Cumulative fuel cost as proportion of sales	Percent	5.3	4.4	4.8	5/ 1.4

1/ Current estimates for fuel cost for retailing are about 0.7% of sales. This comparison assumes that wholesaling and the fuel portion of transportation for wholesaling and retailing would bring the fuel cost to 2% of retail sales. The same margin, 25% of sales, was used for wholesaling and retailing each product. Differences among departments could be used to further differentiate. 2/ Computed from data presented in the "Annual Survey of Manufactures, 1971". 3/ Farm production costs were calculated from the "1971 Summary of Illinois Farm Business Records" covering 3,655 farms. Where necessary, the breakdown was adjusted using data from 1971 farm record summaries from Iowa, Wisconsin, New York, and Minnesota. Farm fuel costs were weighted as given in these farm records including gasoline and oil and electricity, plus 15% of the hired trucking. (The 15% of hired transportation for fuel was based upon an unpublished summary of records covering 12.4 million truck miles and was used throughout this comparison.) 4/ Farm production for meat was adjusted to reflect the high purchases of livestock for feeding. Purchased livestock represented 27.8% of cash sales of Illinois livestock farms. The value added by Minnesota feeder producers represented 11.8% of cash sales; 27.8% x 11.8% = 3.3% of the sales of livestock farms was produced on farms as feeders, so 3.3% was added to the 16.6% of sales produced on the livestock farms to get 19.9% of sales by livestock farms as value added by both stages on livestock farms. Neither dairy nor grain products were adjusted for this two-step process. 5/ The average of 1.4% of total sales for all manufacturing industries was used as the fuel cost for purchased inputs for each of the three classes of products.

Table 10--Price impact upon dairy, meat, and grain mill products at each functional level brought about by doubling the price of fuels.

Item	Unit	Purchased farm inputs		Farm production and shipping		Processing and distribution		Wholesale and retail	
		1/ A	1/ B	1/ A	1/ B	1/ A	1/ B	1/ A	1/ B
Dairy:									
Sales or shipments	Cents	43.4	43.9	60.8	62.6	78.9	82.4	105.9	112.5
Costs of inputs	Cents	23.4	23.4	46.1	46.6	61.4	63.2	80.9	84.4
Value added	Cents	20.0	20.5	14.7	16.0	17.5	19.2	25.0	28.1
Fuel cost	Cents	1.2	1.2	5.4	5.4	1.2	1.2	4.0	4.0
Cumulative fuel cost	Cents	1.2	1.2	6.6	6.6	7.8	7.8	11.8	11.8
Cumulative fuel cost as a proportion of sales	Percent	2.7	2.7	10.9	10.5	9.9	9.5	11.1	10.5
Meat products:									
Sales or shipments	Cents	45.4	45.9	58.3	59.5	77.8	80.4	104.8	109.9
Costs of inputs	Cents	24.4	24.4	47.2	47.7	58.7	59.9	79.8	82.4
Value added	Cents	21.0	21.5	11.1	11.8	19.1	20.5	25.0	27.5
Fuel cost	Cents	1.2	1.2	3.6	3.6	.8	.8	4.0	4.0
Cumulative fuel cost	Cents	1.2	1.2	4.8	4.8	5.6	5.6	9.6	9.6
Cumulative fuel cost as a proportion of sales	Percent	2.6	2.6	8.2	8.1	7.2	7.0	9.2	8.7
Grain mill products:									
Sales or shipments	Cents	33.5	34.1	54.4	56.8	78.3	83.2	105.3	113.6
Cost of inputs	Cents	15.9	15.9	35.5	36.1	55.2	57.6	80.3	85.2
Value added	Cents	17.6	18.2	18.9	20.7	23.1	25.6	25.0	28.4
Fuel cost	Cents	1.0	1.0	4.0	4.0	1.6	1.6	4.0	4.0
Cumulative fuel cost	Cents	1.0	1.0	5.0	5.0	6.6	6.6	10.6	10.6
Cumulative fuel cost as a proportion of sales	Percent	3.0	2.9	9.3	8.8	8.5	7.9	10.1	9.3

1/ Alternative A passes the increased cost through the system while Alternative B adds in the increased cost of fuel and maintains the 1971 relationship between cost of inputs and sales. Cost of inputs adds the increase in cost of fuel in each process to the sales of the previous process so as to isolate the effect of the fuel cost. Computations based upon table 9. Sales at retail compare with $1 of retail sales in table 9, reflecting the price increase.

FARMING ENTERPRISES OF LARGE MULTI-ESTABLISHMENT FIRMS

by
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ABSTRACT

Four hundred and ten multi-establishment firms engaged in farming were identified and classified by their primary business activity into five major categories—farms, agricultural input suppliers, agricultural processors, agricultural distributors and nonagricultural businesses. Total sales of these firms from all sources ranged from $1 million to over $500 million annually. The commodities most commonly produced by these firms were fruits, vegetables, poultry other than broilers, and beef cattle. Integration of farming with other agribusiness activities appeared to be input oriented for cattle and poultry and marketing oriented for fruits and vegetables.

Keywords: corporate farming, food system, integration.

The question of operational control over the production of agricultural commodities may very well be one of the major issues to be faced by the agricultural sector over the next several years. U.S. agriculture has been characterized by small independent farms, usually operated as family businesses, which purchase their inputs and sell their products in competitive open markets. Individual farmers have traditionally had considerable freedom in controlling their own operations. Certain government programs and financial limitations have been the major restraints on the decision-making processes of farm operators.

Over the past decade, however, a number of events have begun to challenge the independent family farm for control of the Nation's agricultural production machine. Among these are an influx of nonfarm capital into certain types of agriculture, increasing ownership of agricultural resources by firms and individuals other than farmers, the movement toward unionization of farm labor, and the increasing coordination of farm production with other stages of the food and fiber system through contractual arrangements and vertical integration.

Ownership and operation of agricultural resources by large nonfarm corporations, the so-called "corporate takeover" of farming, has become a point of major controversy for those who would like to see American agriculture remain the domain of small independent family controlled and operated business. Although this "corporate takeover" has been pointed to by farm leaders and others concerned with the future of agriculture as one of the major problems currently facing the farm sector, very little objective information concerning the identity of outside interests in farming or the types of agriculture in which they are involved has been available. This article reports some of the findings of a recent ERS study undertaken to provide basic information on this question.

Four hundred and ten multi-establishment firms that operated farms were identified from data furnished by Dun and Bradstreet. Total sales of these firms in 1970 ranged from $1 million to over $500 million. Firms were classified by type of farming operation and by primary business or industrial activity using Census SIC classifications (table 11). On the basis of their primary SIC codes, the firms were grouped into five major businesses: farms, agricultural input suppliers, agricultural processors, agricultural distributors, and nonagricultural businesses. Beef cattle production was the leading farm enterprise of the 410 firms (27 percent of the farms produced beef cattle), followed by production of vegetables, poultry other than broilers, and fruits.

Primary Business Activities

Farming was the primary business activity of over

Table 11-Farming activities of 410 multi-establishment firms with $1 million or over total sales, by primary business activity of firms, and type of farming activity, 1970.

Type of farm enterprise	Major business category of owning firm					
	Farms	Agricultural inputs	Agricultural processing	Agricultural distribution	Non-agricultural	All firms
	Number of firms					
Cotton	11	--		1	3	15
Cash grain	11	4	3	3	10	31
Other field crops	13	2	3	3	7	28
Fruit and tree nuts	35	1	10	9	15	70
Vegetable	39	2	10	15	9	75
Dairy	17	1	14	2	6	40
Broiler	12	13	3	9	3	40
Other poultry	18	29	9	13	5	74
Beef cattle	37	7	12	18	37	111
General and other farms	24	8	9	5	24	70
Total firms 1/	149	52	57	64	88	410

1/ The number of firms is less than the number of farm enterprises because some firms are engaged in multiple farming enterprises.

Source: Dun and Bradstreet Complex Business File.

one-third of the firms. Of these firms, 18 percent were primarily fruit producers, the same number were vegetable producers, and 17 percent were primarily beef cattle producers.

There were 52 firms classified as agricultural input suppliers. Feed manufacturers, poultry hatcheries, and farm equipment and supply distributors together accounted for 96 percent of these firms. Feed manufacturers alone made up nearly half of the input firms.

Fifty-seven of the firms were classified as agricultural processors. Dairy processing firms and fruit and vegetable processors each accounted for a fourth of the processing firms. These were followed by meat packers. Together, these 3 types of firms comprised two-thirds of the processing firms that were also engaged in farming.

Sixty-four of the firms were agricultural distribution firms. Wholesalers of fruits and vegetables, poultry, and other farm products together accounted for over 80 percent of these firms.

Eighty-eight of the 410 firms were primarily engaged in some nonagricultural business activity. Firms in land-based industries such as mineral

extraction, forestry, and real estate development accounted for 40 percent of the nonagricultural firms, followed by trade and service firms (31 percent), manufacturing firms (28 percent), and conglomerates (20 percent).

Farming Enterprises of Firms

Vegetables, beef cattle, and fruit and tree nuts were the most commonly reported farming activities of the farm category of firms. Poultry other than broilers was by far the predominant commodity produced by the agricultural input firms, with broilers a distant second. A significant number of the non-broiler poultry operations, however, were breeder flocks for broiler hatching eggs. Farm production of the agricultural processing firms was most heavily concentrated in dairy, beef cattle, fruit, vegetables and poultry other than broilers. With the exception of dairying, the predominant farm enterprises of the agricultural distribution firms included the same commodities as for the processors. Beef cattle was the major farm commodity produced by firms in the nonagricultural category, followed by fruits and grains.

The involvement in agricultural production by the firms identified in this study was not uniform across the spectrum of farm enterprises. Rather, it was quite selective on a commodity by commodity basis. This finding does not support the contention that the farm sector is on the verge of an across-the-board takeover by large corporate and nonfarm interests.

Characteristics of Commodities Produced by Nonfarm Firms

The most prevalent commodities produced by nonfarm firms were fruit, vegetables, poultry other than broilers, and beef cattle, with most of the cattle production being feeding operations. There was also a significant but smaller number of firms involved in broiler and dairy production. These commodities, although diverse, do have certain characteristics in common. They are all labor and management intensive types of agriculture, they are all highly perishable commodities, and the products are all subject to large variations in quality.

Each of these characteristics provides an avenue for agribusiness firms other than traditional farms to involve themselves in the production sector. Intensive types of agriculture are more adaptable to industrialized production techniques than the more extensive farms such as grain or range livestock production. Less extensive holdings of land are required to achieve given production and revenue goals, management resources can be more effectively utilized, and the scale of capital inputs required for large volume production is more readily attainable by industrialized firms than by independent family farms.

Perishability and product quality are related factors. Both bear on the ability of a processing or distribution firm to meet market demands for finished food products. Because of their limited storability, production schedules for perishable commodities must be coordinated with processing schedules and marketing strategies. Production of consumer food products suitable for mass marketing requires, among other things, that raw agricultural commodities be of uniform quality. This also requires a degree of coordination between the production and marketing sectors that is difficult to obtain through a system of independent farm production units and open market procurement by processors. Direct production and ownership control of agricultural resources by processing and marketing firms is one means by which the interstage coordination required for modern food merchandising techniques can be attained.

Specialization and Functional Integration

For the firms studied, a substantial amount of the integration involving livestock commodities, with the exception of dairy, was input oriented. This is in contrast to the integration involving crop and dairy production which was almost entirely oriented toward marketing activities. This showed up not only in the numbers of input and marketing firms integrated into agricultural production, but in the number of farm firms integrated into nonfarm food system activities. While crop and dairy producing farm firms had only nominal integration into input functions, from half to all of the beef cattle and poultry farm firms were integrated into inputs.

This strongly suggests that the basic motivating factors for vertical integration in most livestock production enterprises is related to the input-production linkage, with the key input being feed manufacturing. Vertical integration in crop and dairy production enterprises, on the other hand, appears to be motivated primarily by the need for coordination between the production and marketing stages.

Involvement of firms in production of cotton, cash grains, and range livestock was largely limited to firms that were primarily farms and firms that were primarily engaged in nonagricultural activity. There was only very limited indication of integration of production of these commodities with other agribusiness functions such as farm supply and processing, and that which is occurring is quite likely only coincidental. Farm firms identified in the study that were producing cotton, grains, and range livestock were basically nothing more than very large farms. The nonagricultural firms producing

these commodities were mainly firms with land-based activities and conglomerates. These farming ventures can most likely be explained in terms of resource utilization with farming being either an interim use or a joint use of land resources held for nonagricultural purposes.

THE INSTITUTIONAL CONVENIENCE FOOD MARKET

by
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ABSTRACT

The value of convenience foods sold to the institutional market by 152 food processors totaled over $10 billion in 1973. Most of these sales were among the 14 largest firms reporting. Firms reported that over 6,000 food items were introduced in the last 5 years. The items discontinued in the 5-year period amounted to about 19 percent of those introduced. Frozen heat and serve entrees in standardized portions were seen as the largest growth area for convenience foods in the institutional market.

Keywords: Covenience foods, institutions, entrees, frozen foods.

Food trade publications report that convenience foods make up about one-third of the retail value of all foods marketed in the United States. Convenience foods are generally defined as fully or partially prepared dishes—foods in which significant amounts of preparation time, culinary skills, and energy inputs have been transferred from the kitchen of the end user to the food processor and distributor.

Convenience foods frequently are made up of ingredients which are themselves already processed to some degree. Or, they may contain analogs or substitutes not of agricultural origin. Convenience foods might also substitute one agricultural product for another (e.g., textured vegetable protein instead of, or in addition to, meat). In any case, the convenience foods area is a growing, dynamic, and innovative segment of our food industry. Its growth and utilization of raw products has great implications for the Nation's agribusiness sector.

As the opening phase of research on the impact of convenience foods on U.S. agriculture, food processing, and distribution, a survey of food processors was conducted during mid-1973. Firms surveyed were processors who supply the hotel-restaurant-institutional (HRI) segment of the convenience foods market. The hotel-restaurant-institutional area was chosen as a starting point for the study because it is frequently the proving ground for new convenience foods, food forms, and innovations in food preparation. Subsequent phases of the study will concentrate on the users of convenience foods, including food service outlets and household consumers. The study of the household market will include an updating of an earlier study of the comparative costs of convenience foods.

A mail survey of over 400 processors of convenience foods was completed in the fall of 1973. The analysis excluded firms which had stopped producing convenience food products and firms that were exclusively processing raw seafoods. Allowing for these exclusions, about two-fifths of the companies responding to the survey were used.

Convenience Food Sales

The value of convenience foods sold to the institutional market by 152 respondent firms totaled over $10 billion. Nine billion dollars of this was accounted for by the 14 largest firms each with annual sales of over $250 million.

Of the firms responding, over two-thirds had national sales distribution of their convenience food products. Regional sales distribution was reported by one-fourth of the firms. Only a few small companies limited their distribution to a local area (table 12).

Slightly over half of the firms responding sold primarily to the HRI market, and about half the HRI

Table 12--Importance of convenience foods to total product line and area of distribution of food processors, by firm size.

Sales volume	Size of firm 1/			
	Large	Medium	Small	Average
	Percent			
Proportion HRI items of total product line	59	50	86	56
Proportion convenience items of total product line	56	50	35	50
Proportion convenience items of HRI line	49	55	32	49
Sales distribution:				
National	100	77	53	69
Regional	-	19	37	25
Local	-	4	10	6

1/ Based on volume of sales: Large, $250 million and over; medium, $2 - $250 million; small, under $2 million.

product line for these companies was made up of convenience items. However, convenience food products accounted for 84 percent of dollar sales of the firms to this market.

The importance of convenience foods to a company's product line was greatest among the larger firms, usually accounting for nearly three-fifths of the items produced. Among smaller companies, the proportion of convenience items to total items was nearer to one-third.

When asked about the user of raw agricultural commodities in covenience foods, respondents most frequently cited vegetables, meats, and dairy products as being the principal ingredients. Cereals, fruit, and poultry were next in importance. Information on the quantity and value of raw products used by the industry will be obtained during a later phase of this study.

Heat and serve and portion control items were seen as the largest growth areas for convenience foods in the HRI market. Among food forms (i.e., canned, dried, frozen) respondents expected frozen convenience products to register the greatest sales increase during the next 5 years.

Product Introductions and Discontinuances

Firms reported on the number of convenience items that were introduced and discontinued in the last 5 years in relationship to the level of preparedness and by the product form for each of 13 food categories. They reported that a total of 6,357 food items were introduced in the last 5 years. Of the products introduced, half were either mix and serve or heat and serve; one-third required additional cooking, and the remainder were either thaw and serve or table ready. Frozen products accounted for over two-thirds of the total items introduced. Canned and packaged goods and dry-mix products accounted for most of the remainder (table 13).

The items discontinued in the 5-year period amounted to about 19 percent of those introduced. Frozen products accounted for the greatest number of discontinued items (table 14).

Entrees were the largest group of convenience foods introduced in the last 5 years, numbering 2,573 products or two-fifths of all items (table 15). Nearly all were frozen products requiring cooking or heating before serving. About 14 percent of the entrees introduced during the 5-year period were discontinued, slightly less than the average for all items.

Side dishes comprised the second largest group of convenience foods to be introduced in the last 5 years. Three-fourths of the 458 side dishes introduced were in the heat and serve or mix and serve category. About half were frozen and most of the remainder were canned or packaged. Of the side dishes introduced, only 8.5 percent were discontinued.

Table 13--Convenience foods introduced by a sample of food processors, by level of preparedness and product form, 1968-73

Food category	Total food items or units	Level of preparedness			Product form					
		Requires cooking	Heat'n serve mix'n serve	Table ready thaw'n serve	Freeze dried	Frozen	Dry-mix	Dry-not mixed	Packaged canned	Fresh
		Number								
Hors d'oeuvres	228	51	158	19	0	216	0	0	9	3
Salads	77	5	0	72	0	5	0	5	37	30
Entrees	2,573	1,012	1,550	11	5	2,430	3	0	127	8
Side dishes	458	85	343	30	7	244	11	0	191	5
Dinners	271	60	156	55	0	266	0	0	0	5
Breads and rolls	169	31	64	74	0	112	27	0	0	30
Cakes and pastries	444	99	76	269	0	254	57	2	0	131
Dessert pies	231	103	53	75	0	142	37	0	8	44
Snacks	123	16	15	92	0	32	4	6	43	38
Sauces and gravies	202	53	127	22	2	39	103	14	38	6
Condiments	217	9	1	207	0	3	0	3	185	26
Bases and mixes	282	93	173	16	0	11	241	13	16	1
Soups	154	38	114	2	10	37	40	0	67	0
All other	928	355	365	208	13	544	130	70	89	82
Total	6,357	2,010	3,195	1,152	37	4,355	653	113	810	409

Table 14--Convenience foods discontinued by a sample of food processors, product form, 1968-73

Food category	Total food items or units	Level of preparedness			Product form					
		Requires cooking	Heat'n serve mix'n serve	Table ready thaw'n serve	Freeze dried	Frozen	Dry-mix	Dry-not mixed	Packaged canned	Fresh
		Number								
Hors d'oeuvres	34	9	25	0	0	32	0	0	2	0
Salads	10	5	0	5	0	5	0	0	5	0
Entrees	371	142	226	3	0	314	1	0	56	0
Side dishes	39	6	14	19	0	14	1	0	24	0
Dinners	92	3	89	0	0	92	0	0	0	0
Breads and rolls	52	0	34	18	0	46	0	0	0	6
Cakes and pastries	86	12	7	67	0	47	4	0	0	35
Dessert pies	55	11	15	29	0	33	1	0	0	21
Snacks	21	0	2	19	0	3	0	0	17	1
Sauces and gravies	30	17	13	0	0	2	17	5	6	0
Condiments	58	0	3	55	0	3	0	0	55	0
Bases and mixes	46	43	3	0	0	8	32	1	5	0
Soups	53	5	48	0	0	18	13	0	22	0
All other	277	208	26	43	8	205	1	27	30	6
Total	1,224	461	505	258	8	822	70	33	222	69

Table 15--Items introduced and discontinued, 1968-1973.

Food category	Food items introduced	Food items discontinued	Discontinuances as a proportion of introductions
	Number		Percent
Hors d'oeuvers	228	34	15
Salads	77	10	13
Entrees	2,573	371	14
Side dishes	458	39	9
Dinners	271	92	34
Breads and rolls	169	52	31
Cakes and pastries	444	86	19
Dessert pies	231	55	24
Snacks	123	21	17
Sauces and gravies	202	30	15
Condiments	217	58	27
Bases and mixes	282	46	16
Soups	154	53	34
All others	928	277	29
Total	6,357	1,224	19

CONSUMER EVALUATION OF MECHANICALLY HARVESTED SUN DRIED RAISINS

by
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ABSTRACT

Economic and consumer evaluations of raisins produced from mechanically harvested grapes were conducted. Preliminary estimates of costs per acre for the mechanical harvesting of grapes for raisins indicate a reduction of $15 per acre from the costs of hand harvesting. Product evaluations indicated that most consumers could not tell the difference between the mechanically harvested raisins and hand picked raisins.

Keywords: raisins, harvesting, cost, product evaluation.

The Central Valley of California produces about 40 percent of the world raisin crop. In the past 5 years, California's raisin crop has averaged 216,000 tons annually, primarily from Thompson Seedless grapes. Most (90 percent) were sun dried. Raisins were first produced in California in 1873 and the method of harvesting and drying the grapes has not changed essentially since that time. The grapes are cut from the vine by hand in whole clusters and placed on paper trays between the vine rows to sun dry. After the grapes have dried to a moisture content of less than 16 percent, they are put in boxes and taken to a processing plant for cleaning, grading, and packaging. The entire procedure takes about 21 days and requires considerable hand labor. The decrease in availability of workers and the increase in costs have resulted in a search for new methods that will result in lower production costs.

Mechanical Harvesting

One method that has been developed is the mechanical harvesting of raisin grapes followed by sun drying. The California State University at Fresno and the Western Regional Research Center, Albany, Calif. have collaborated in a joint research project to determine the commercial feasibility of this method. With this method, the fruit-bearing canes are cut several days prior to harvest to initiate drying and to facilitate harvesting. The mechanical harvester dislodges the grapes as single berries which are deposited onto a continuous paper tray automatically laid behind the harvester.[2] In about 10 to 12 days, when the grapes have dried to a moisture content of less than 16 percent, they are mechanically picked up and conveyed to bins for delivery to the processing plant. This process eliminates several days of drying time and thus reduces the risk of damage due to insects, rodents, birds, and rain.

Preliminary estimates of costs per acre for the mechanical harvesting of grapes for raisins indicate a reduction of $15 per acre from the costs of hand harvesting (table 16). These costs are based upon actual and estimated costs provided by farmers involved in the research project.

Product Evaluation

Panel evaluations of mechanically harvested and hand-picked raisins conducted at the Western Center indicate no differences in flavor but a detectable

[1]National Economic Analysis Division, Enonomic Research Service of the U.S. Department of Agriculture, Albany, Calif. and Professor of Viticulture in the Department of Plant Science, California State University at Fresno, Calif., respectively.

[2]Studer, H.E., and H.P. Olmo. The Severed Cane Technique and its Application to Mechanical Harvesting of Raisin Grapes. Transactions of American Society of Agricultural Engineers. Vol. 14, 1:38-43. 1971.

Table 16--Estimate of costs for harvesting raisins, mechanical versus hand picked, Fresno, California, 1973 season[1/]

Operation	Mechanically harvested	Hand picked
	- Dollars per acre -	
1. Ground preparation - terrace and disc	5.00	5.00
2. Cut canes (3 man hrs./acre @ $3.00)	9.00	-
3. Harvest: Machine - ($11.00/ton of grapes)	110.00[2/]	-
Hand - 1,000 paper trays @ 12.0¢	-	120.00
4. Tray laying device for spreading fruit on continuous paper tray	15.00	-
5. Turn and roll - 1,000 trays @ 3.0¢	-	30.00
6. Paper: Continuous roll	12.00	-
1,000 trays @ 1.3¢	-	13.00
7. Pickup and boxing machine	20.00	-
8. Semi-automatic pickup machine and 3 man hrs./acre boxing labor	-	18.00
9. Delivery from field to processing plant	9.00	9.00
10. Crop insurance	13.00	13.00
11. Miscellaneous	5.00	5.00
Total harvest cost	198.00	213.00[3/]

1/ Based on 10 green tons/acre or 2.25 dry tons. Cost data provided by two raisin producers who participated with California State University, Fresno, in this research project.

2/ This is a custom charge.

3/ Similar to costs of $206/ton estimated by Agricultural Extension, University of California, "1972 Grape Production Costs in the San Joaquin Valley, Thompson Seedless for Raisins or Wine," AXT-50, Rev. 11/72.

difference in appearance.[3] The mechanically harvested raisins have a shinier appearance than the hand-picked raisins. To determine consumer acceptance of these raisins, Federal employees located at the Western and Southern Regional Research Centers were given samples of both mechanically harvested and hand-picked sun-dried raisins to evaluate at home. Seventy-eight respondents at the Southern Center in New Orleans and 107 at the Western Center in Albany representing all age groups and household sizes participated in the study. Persons who disliked raisins were not included in the study. The study was conducted from April to September 1972.[4]

Each respondent was given a 1-pound box of raisins. Half of the respondents received mechanically harvested raisins and the other half received hand-picked raisins. The boxes were coded, thus the respondents did not know which type of raisin they received. Respondents were instructed to use the raisins in ways which they normally use them, and to then complete a questionnaire evaluating the raisins they had received. Several weeks later, the respondents who had received mechanically harvested raisins received samples of hand-picked ones and vice versa. Again they were asked to complete a questionnaire evaluating the raisins they had received.

The results of the evaluation indicate that most respondents could not tell the difference between the two types of raisins. Where differences were noted, they were nearly always in favor of the mechanically harvested raisins.

Almost all of the respondents ate the raisins out of hand; however, many also used them in baked goods, salads, and in cold cereals (table 17). Only a few respondents indicated that they used them in hot cereals. Some other uses were as a condiment, in curry, in casseroles, and with ice cream.

The majority of respondents could not tell the difference between the two samples of raisins and the raisins that they usually used (table 17). Where differences were noted, the mechanically harvested raisins got a better rating than the hand picked.

When respondents compared the raisins received in the second sample with those in the first sample, many could not taste any difference (table 18). Where differences were noted, the mechanically harvested raisins received a higher rating than the hand-picked raisins. Reasons for preferring one type of raisin over another were that they had a better appearance, better flavor, higher moisture, or better texture (table 19).

The proportion of respondents indicating that they would buy the mechanically harvested raisins was higher than the proportion who said they would buy the hand-picked raisins (table 20).

Of all the persons who ate the raisins, only a small proportion indicated a dislike for them and there were fewer complaints about the mechanically harvested raisins than about the hand-picked raisins. Reasons for disliking one type of raisin over another were that they were too dry, were tasteless or odd tasting, had a color or size variation, were too tough or too soft.

Other methods of drying grapes in conjunction with mechanical harvesting are also being investigated. One of these methods consists of precutting the fruit-bearing canes followed by a spray treatment of the grapes that allows on-the-vine drying followed by mechanical harvesting. Economic and consumer evaluations of raisins produced by this method are now being conducted. The results of these tests will be considered by growers in making their decision of whether or not to shift from traditional methods of harvesting to mechanical harvesting.

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[3]Guadagni, Dan. Taste and Appearance Results on Raisins Prepared at California State University at Fresno (1971 Season). Western Regional Research Center, Albany Calif. 1972. Unpublished.

[4]R. Corkern of the National Economic Analysis Division, Economic Research Service, assisted with this study by conducting the evaluations in New Orleans.

Table 17.--Use of raisins and preferences

Item	South		West	
	Mechanically harvested	Hand picked	Mechanically harvested	Hand picked
	Percent 1/			
How used				
Eaten out of hand	99	99	98	98
In baked goods	36	40	37	34
In salads	36	26	25	21
In cold cereal	44	45	29	17
In hot cereal	13	6	15	17
Other	4	4	3	2
Preferences				
Eaten out of hand				
Liked the same	48	46	56	45
Liked better	40	28	26	25
Liked less	12	26	18	30
In baked goods				
Liked the same	57	52	75	69
Liked better	36	35	23	17
Liked less	7	13	2	14
In salads				
Liked the same	68	65	59	59
Liked better	32	20	37	23
Liked less	0	15	4	18
In cold cereal				
Liked the same	59	56	71	61
Liked better	35	25	16	22
Liked less	6	19	13	17

1/ Some respondents used the raisins in more than one way.

Table 18.--How respondents rated raisins in second sample in comparison with raisins in first sample.

How raisins in second sample compared with first sample	South	West
	Percent	
Second sample mechanically harvested		
Liked both samples the same	39	26
Liked second sample best	35	39
Liked first sample best	26	35
Second sample hand picked		
Liked both samples the same	25	36
Liked second sample best	27	26
Liked first sample best	48	38

Table 19.--Distribution of respondents preferring one type of raisin over another 1/

Reasons preferred raisins	South		West	
	Liked mechanically harvested best	Liked hand picked best	Liked mechanically harvested best	Liked hand picked best
	Percent 2/			
Better appearance	9	3	6	2
Better flavor	12	8	13	9
More moist	14	9	11	11
Better texture	8	6	7	5

1/ Omits respondents who liked both types of raisins about the same.
2/ Percent of total sample. Some respondents gave more than one reason for liking the raisins.

Table 20.--Other characteristics

Item	Unit	South		West	
		Mechanically harvested	Hand picked	Mechanically harvested	Hand picked
Would you buy the raisins?					
Yes	Pct.	71	63	59	44
Maybe	"	19	22	31	23
No	"	10	15	10	33
Persons who disliked the raisins	"	7	15	14	19
Persons who ate the raisins	Number	254	254	340	340
Why did you dislike the raisins?					
Too dry	Pct. 1/	14	21	17	20
Tasteless, odd taste	"	9	13	11	26
Color or size variation	"	6	12	3	9
Too tough or too soft	"	5	5	6	9

1/ Percent of total sample. Some respondents gave more than one reason.

Table 21.--Farm food products: Retail price, farm value, byproduct allowance, farm-retail spread, and farmer's share of retail price, fourth quarter 1973.

Product	Farm equivalent	Retail unit	Retail price	Gross farm value	Byproduct allowance	Net farm value 1/	Farm-retail spread	Farmer's share
			Cents					Percent
Beef, Choice grade	2.28 lb. Choice cattle	Pound	135.1	90.4	9.5	80.9	54.2	60
Lamb, Choice grade	2.47 lb. lamb	Pound	145.0	82.9	12.6	70.3	74.7	48
Pork	1.97 lb. hog	Pound	116.1	79.7	7.6	72.1	44.0	62
Butter	Milk for butter	Pound	102.6	165.8	96.1	69.7	32.9	68
Cheese, American proc.	Milk for American cheese	½ pound	66.5	36.7	.8	35.9	30.6	54
Ice cream	Cream, milk, and sugar	½ gallon	98.2	-	-	38.9	59.3	40
Milk, evaporated	Milk for evaporating	14½-ounce can	24.5	14.1	.2	13.9	10.6	57
Milk, fresh:								
Home delivered	4.39 lb. Class I milk	½ gallon	82.2	-	-	38.4	43.8	47
Sold in stores	4.39 lb. Class I milk	½ gallon	72.9	-	-	38.4	34.5	53
Chicken, frying	1.41 lb. broiler	Pound	55.3	-	-	30.0	25.3	54
Turkey	1.28 lb. turkey	Pound	88.8	-	-	53.2	35.6	60
Eggs, Grade A Large	1.03 dozen	Dozen	86.3	-	-	60.7	25.6	70
Bread, white:								
All ingredients	U.S. farm ingredients	Pound	31.3	-	-	6.7	24.6	21
Wheat	.867 lb. wheat	Pound	-	6.1	1.0	5.1	-	16
Bread, whole wheat	.708 lb. wheat	Pound	46.9	4.4	-	6.1	40.8	13
Cookies, sandwich	.528 lb. wheat	Pound	60.6	-	-	10.7	49.9	18
Corn flakes	2.87 lb. yellow corn 2/	12 ounces	33.7	11.7	7.7	4.0	29.7	12
Flour, wheat	6.85 lb. wheat	5 pounds	95.5	50.2	8.1	42.1	53.4	44
Rice, long grain	1.59 lb. rough rice	Pound	42.9	24.9	2.2	22.7	20.2	53
Apples	1.04 lb. apples	Pound	29.7	-	-	11.2	18.5	38
Grapefruit	1.03 grapefruit	Each	20.8	-	-	4.3	16.5	21
Lemons	1.04 lb. lemons	Pound	42.6	-	-	13.1	29.5	31
Oranges	1.03 dozen oranges	Dozen	113.6	-	-	24.2	89.4	21
Cabbage	1.08 lb. cabbage	Pound	17.6	-	-	5.3	12.3	30
Carrots	1.03 lb. carrots	Pound	21.6	-	-	7.1	14.5	33
Celery	1.08 lb. celery	Pound	21.6	-	-	5.1	16.5	24
Cucumbers	1.09 lb. cucumbers	Pound	30.3	-	-	11.0	19.3	36
Lettuce	1.88 lb. lettuce	Head	33.9	-	-	8.6	25.3	25
Onions	1.06 lb. onions	Pound	19.5	-	-	7.1	12.4	36
Peppers, green	1.09 lb. peppers	Pound	52.6	-	-	22.3	30.3	42
Potatoes	10.42 lb. potatoes	10 pounds	130.1	-	-	34.4	95.7	26
Tomatoes	1.18 lb. tomatoes	Pound	45.2	-	-	17.5	27.7	39

Continued--

Table 21.--Farm food products: Retail price, farm value, byproduct allowance, farm-retail spread, and farmer's share of retail price, fourth quarter 1973.

Product	Farm equivalent	Retail unit	Retail price	Gross farm value	Byproduct allowance	Net farm value 1/	Farm-retail spread	Farmer's share
			Cents					Percent
Peaches, canned	1.52 lb. Calif. cling	No. 2½ can	44.1	-	-	7.1	37.0	16
			58.3	-	-	12.1	46.2	21
Pears, canned	1.81 lb. pears for canning	No. 2½ can	24.6	-	-	1.7	22.9	7
Beets, canned	1.19 lb. beets for canning	No. 303 can	25.6	-	-	3.1	22.5	12
Corn, canned	2.25 lb. sweet corn	No. 303 can	27.7	-	-	4.2	23.5	15
Peas, canned	.725 lb. peas for canning	No. 303 can	25.7	-	-	2.8	22.9	11
Tomatoes, canned	1.515 lb. tomatoes for canning	No. 303 can	25.7	-	-	3.2	22.5	12
Lemonade, frozen	.834 lb. lemons for processing	6-ounce can	15.0	-	-	3.8	11.2	25
Orange juice, frozen	3.19 lb. oranges	6-ounce can	25.2	-	-	8.4	16.8	33
Potatoes, french fried, frozen	1.41 lb. potatoes	9 ounces	17.9	-	-	3.8	14.1	21
Peas, frozen	.68 lb. peas for canning	10 ounces	24.5	-	-	4.2	20.3	17
Beans, dried	1.04 lb. dry beans	Pound	43.8	-	-	28.8	15.0	66
Margarine	Soybeans, cottonseed, and milk	Pound	44.8	43.2	24.6	18.6	26.2	42
Peanut butter	1.21 lb. peanuts	12-ounce jar	54.1	-	-	19.8	34.3	37
Salad and cooking oil	Soybeans, cottonseed, and corn	24-oz. bottle	83.3	82.8	53.6	29.2	54.1	35
Vegetable shortening	Soybeans and cottonseed	3 pounds	135.4	153.7	89.3	64.4	71.0	48
Sugar	Sugar beets and cane	5 pounds	82.1	32.4	2.0	4/ 30.4	4/ 51.7	37
Spaghetti, canned	Wheat, tomatoes, cheese, and sugar	15¼-ounce can	20.5	-	-	3.1	17.4	15

1/ Payment to farmers for equivalent quantities of farm products (gross farm value) minus imputed value of byproducts obtained in processing.

2/ Farm value based on market price of corn received by farmers; no allowance made for price support payment received by farmers who comply with the Federal Feed Grain Program.

3/ Net farm value including Government payments to producers was 34.1 cents with a farmer's share of 42 percent. Farm-retail spread less Government processor tax was 49.0 cents.

Table 22.--Farm food products: Retail price, farm value, farm-retail spread, and farmer's share of retail price, fourth quarter 1973, third quarter 1973 and fourth quarter 1972.

Product 1/	Retail unit	Retail price			Farm value			Farm-retail spread			Farmer's share		
		IV 1973	III 1973	IV 1972	IV 1973	III 1973	IV 1972	IV 1973	III 1973	IV 1972	IV 1973	III 1973	IV 1972
		Cents									Percent		
Beef, Choice	Pound	135.1	141.8	113.2	80.9	99.0	70.1	54.2	42.8	43.1	60	70	62
Lamb, Choice	Pound	145.0	148.2	122.6	70.3	78.0	61.1	74.7	70.2	61.5	48	53	50
Pork	Pound	116.1	121.8	87.7	72.1	86.2	51.7	44.0	35.6	36.0	62	71	59
Butter	Pound	102.6	91.2	87.2	69.7	63.7	58.9	32.9	27.5	28.3	68	70	68
Cheese, American process	½ pound	66.5	60.0	55.1	35.9	30.5	24.7	30.6	29.5	30.4	54	51	45
Ice cream	½ gallon	98.2	90.4	85.7	38.9	33.8	29.9	59.3	56.6	55.8	40	37	35
Milk, evaporated	14½-ounce can	24.5	22.6	20.2	13.9	11.7	9.4	10.8	10.9	10.8	56	52	47
Milk, fresh:													
Home delivered	½ gallon	82.2	74.4	69.5	38.4	33.8	30.5	43.8	40.6	39.0	47	45	44
Sold in stores	½ gallon	72.9	64.7	59.8	38.4	33.8	30.5	34.5	30.9	29.3	53	52	51
Chicken, frying	Pound	55.3	74.9	41.5	30.0	49.1	20.1	25.3	25.8	21.4	54	66	48
Turkey	Pound	88.8	79.3	55.7	53.2	49.3	29.4	35.6	30.0	26.3	60	62	53
Eggs, large Grade A	Dozen	86.3	87.5	57.8	60.7	64.3	35.7	25.6	23.2	22.1	70	73	62
Bread, white:													
All ingredients	Pound	31.3	27.7	24.7	6.7	5.9	4.4	24.6	21.8	20.3	21	21	18
Wheat	Pound	-	-	-	5.1	4.5	.6	26.2	23.2	21.3	16	16	14
Bread, whole wheat	Pound	46.9	43.0	39.5	6.1	5.2	3.9	40.8	37.8	35.6	13	12	10
Cookies, sandwich	Pound	60.6	57.6	55.3	10.7	9.5	6.2	49.9	48.1	49.1	18	16	11
Corn flakes	12 ounces	33.7	32.7	30.8	4.0	4.1	2.1	29.7	28.6	28.7	12	13	7
Flour, white	5 pounds	95.5	73.5	60.3	42.1	37.0	27.2	53.4	36.5	33.1	44	50	45
Rice, long grain	Pound	42.9	28.2	24.0	22.7	14.7	10.6	20.2	13.5	13.4	53	52	44
Apples	Pound	29.7	34.7	23.8	11.2	10.5	8.5	18.5	24.2	15.3	38	30	36
Grapefruit	Each	20.8	23.7	20.5	4.3	5.9	4.8	16.5	17.8	15.7	21	25	23
Lemons	Pound	42.6	38.9	35.1	13.1	12.8	10.0	29.5	24.8	25.1	31	34	28
Oranges	Dozen	113.6	107.6	95.6	24.2	26.1	16.8	89.4	81.5	78.8	21	24	18
Cabbage	Pound	17.6	18.5	13.8	5.3	7.8	4.3	12.3	10.7	9.5	30	42	31
Carrots	Pound	21.6	22.7	22.1	7.1	8.4	7.9	14.5	14.3	14.2	33	37	36
Celery	Pound	21.6	27.0	22.1	5.1	9.1	6.2	16.5	17.9	15.9	24	34	28
Cucumbers	Pound	30.3	26.1	23.8	11.0	8.4	6.6	19.3	17.7	17.2	36	32	28
Lettuce	Head	33.9	46.1	37.7	8.6	13.2	12.7	25.3	32.9	25.0	25	29	34
Onions	Pound	19.5	22.3	19.4	7.1	6.8	6.8	12.4	15.5	12.6	36	30	35
Peppers, green	Pound	52.6	48.0	42.1	22.3	13.6	13.6	30.3	34.4	28.5	42	28	32
Potatoes	10 pounds	130.1	164.8	97.3	34.4	60.1	25.1	95.7	104.7	72.2	26	36	26
Tomatoes	Pound	45.2	47.8	48.4	17.5	20.6	17.5	27.7	27.2	30.9	39	43	36

Continued--

Table 22.--Farm food products: Retail price, farm value, farm-retail spread, and farmer's share of retail price, fourth quarter 1973, third quarter 1973, and fourth quarter 1972.

Products	Retail unit	Retail price			Farm value			Farm-retail spread			Farmer's share		
		IV 1973	III 1973	IV 1972	IV 1973	III 1973	IV 1972	IV 1973	III 1973	IV 1972	IV 1973	III 1973	IV 1972
		Cents									Percent		
Peaches, canned	No. 2½ can	44.1	41.5	37.7	7.1	7.1	7.0	37.0	34.4	30.7	16	17	19
Pears, canned	No. 2½ can	58.3	56.7	54.4	12.1	12.1	12.0	46.2	44.6	42.4	21	21	22
Beets, canned	No. 303 can	24.6	24.1	21.3	1.7	1.5	1.4	22.9	22.6	19.9	7	6	7
Corn, canned	No. 303 can	25.6	25.2	24.3	3.1	3.0	2.8	22.5	22.2	21.5	12	12	12
Peas, canned	No. 303 can	27.7	27.0	26.3	4.2	4.2	4.1	23.5	22.8	22.2	15	16	16
Tomatoes, canned	No. 303 can	25.7	24.8	23.2	3.2	2.8	2.7	22.5	22.0	20.5	12	11	12
Lemonade, frozen	6-ounce can	15.0	14.6	14.6	3.8	3.8	3.8	11.2	10.8	10.8	25	26	26
Orange juice, frozen	6-ounce can	25.2	24.9	24.9	8.4	8.4	10.6	16.8	16.5	14.3	33	34	43
Potatoes, french fried, frozen	9 ounces	17.9	17.2	16.7	3.8	4.0	2.6	14.1	13.2	14.1	21	23	16
Peas, frozen	10 ounces	24.5	23.8	22.8	4.2	4.0	3.8	20.3	19.8	19.0	17	17	17
Beans, dried	Pound	43.8	29.1	25.6	28.8	17.2	9.2	15.0	11.9	16.4	66	59	36
Margarine	Pound	44.8	37.7	32.9	18.6	16.0	6.7	26.2	21.7	26.2	42	42	20
Peanut butter	12-ounce jar	54.1	52.1	50.6	19.8	18.2	17.6	34.3	33.9	33.0	37	35	35
Salad and cooking oil	24-oz. bottle	83.3	69.5	63.3	29.2	24.8	11.0	54.1	44.7	52.3	35	36	17
Vegetable shortening	3 pounds	135.4	108.6	96.3	64.4	55.1	24.0	71.0	53.5	72.3	48	51	25
Sugar	5 pounds	82.1	75.6	70.1	30.4	31.5	29.3	51.7	44.1	40.8	37	42	42
Spaghetti, canned	15½-oz. can	20.5	20.2	19.8	3.1	2.8	2.2	17.4	17.4	17.6	15	14	11

1/ Primary products in the farm-food market basket.
2/ Preliminary.

Table 23.--The market basket of farm foods by product group: Retail cost, farm value, farm-retail spread, and farmer's share of retail cost, 1972 and 1973, by quarters.

Item	1972 IV	1973 I	1973 II	1973 III	1973 IV
	Dollars				
Retail cost					
Market basket	1330.63	1413.83	1497.05	1603.67	1634.65
Meat	432.91	477.93	508.39	560.24	545.85
Dairy	229.76	234.15	239.53	245.85	276.40
Poultry	50.67	59.87	70.17	88.84	69.32
Eggs	41.81	50.25	49.82	62.86	62.80
Bakery and cereal:					
All ingredients	192.12	195.77	203.56	211.42	244.09
Grain	-	-	-	-	-
Fresh fruits	60.27	60.58	66.43	72.15	68.68
Fresh vegetables	90.20	100.96	118.92	117.06	100.77
Proc. fruits and veg.	128.99	130.24	133.06	134.56	142.73
Fats and oils	44.79	44.55	46.57	49.58	59.49
Miscellaneous	59.11	59.53	60.59	61.12	64.52
Farm value					
Market basket	537.70	625.49	673.80	779.51	720.67
Meat	250.60	303.71	322.50	381.27	319.85
Dairy	109.97	112.84	114.65	124.08	143.82
Poultry	24.76	33.91	40.66	57.97	38.02
Eggs	25.82	33.45	33.22	46.17	44.18
Bakery and cereal:					
All ingredients	36.15	37.96	41.16	50.47	59.86
Grain	29.10	29.72	31.67	39.72	48.16
Fresh fruits	18.82	20.93	23.82	21.40	20.45
Fresh vegetables	27.89	36.40	46.18	40.91	30.39
Proc. fruits and veg.	24.44	24.26	24.58	25.56	27.90
Fats and oils	10.03	12.32	16.84	20.63	24.18
Miscellaneous	9.23	9.71	10.19	11.05	12.02
Farm-retail spread					
Market basket	792.93	788.34	823.25	824.16	913.98
Meat	182.31	174.22	185.89	178.97	226.00
Dairy	119.79	121.31	124.88	121.77	132.58
Poultry	25.91	25.96	29.51	30.87	31.30
Eggs	15.99	16.80	16.60	16.69	18.62
Bakery and cereal:					
All ingredients	155.97	157.81	162.40	160.95	184.23
Grain	-	-	-	-	-
Fresh fruits	41.45	39.65	42.61	50.75	48.23
Fresh vegetables	62.31	64.56	72.74	76.15	70.38
Proc. fruits and veg.	104.55	105.98	108.48	109.00	114.83
Fats and oils	34.76	32.23	29.73	28.95	35.31
Miscellaneous	49.88	49.82	50.40	50.07	52.50
Farmer's share					
	Percent				
Market basket	40.4	44.2	45.0	48.6	44.1
Meat	57.9	63.6	63.4	68.1	58.6
Dairy	47.9	48.2	47.9	50.5	52.0
Poultry	48.9	56.6	57.9	62.2	54.8
Eggs	61.8	66.6	66.7	73.4	70.4
Bakery and cereal:					
All ingredients	18.8	19.4	20.2	23.9	24.5
Grain	15.2	15.2	15.6	18.8	19.7
Fresh fruits	31.2	34.6	35.9	29.7	29.8
Fresh vegetables	30.9	36.0	38.8	35.0	30.2
Proc. fruits and veg.	19.0	18.6	18.5	19.0	19.6
Fats and oils	22.4	27.6	36.2	41.6	40.6
Miscellaneous	15.6	16.3	16.8	18.1	18.6

Table 24.--The market basket of farm foods by product group: Retail cost, farm value, farm-retail spread, and farmer's share of retail cost, annually 1969-73.

Item	1969	1970	1971	1972	1973
	Dollars				
	Retail cost				
Market basket	1178.98	1228.43	1250.47	1310.82	1537.30
Meat	364.11	381.22	377.39	422.54	523.10
Dairy	208.53	218.84	225.49	228.83	248.98
Poultry	50.73	49.76	50.13	50.60	72.05
Eggs	44.83	44.30	38.27	37.97	56.43
Bakery and cereal:					
All ingredients	176.11	185.61	192.67	192.07	213.71
Grain	-	-	-	-	-
Fresh fruits	51.62	51.52	55.68	58.82	66.96
Fresh vegetables	76.16	81.42	83.45	88.17	109.43
Proc. fruits and veg.	116.32	119.24	125.19	127.97	135.16
Fats and oils	37.96	40.84	44.68	45.21	50.04
Miscellaneous	52.61	55.68	57.52	58.64	61.44
	Farm value				
Market basket	481.24	478.00	479.61	524.14	699.87
Meat	214.84	210.18	207.24	246.33	331.83
Dairy	100.06	104.22	106.36	108.86	123.85
Poultry	25.89	23.14	23.79	24.59	42.64
Eggs	29.86	27.74	21.89	21.69	39.25
Bakery and cereal:					
All ingredients	27.75	29.51	30.25	31.93	47.36
Grain	21.37	22.22	22.54	24.63	37.32
Fresh fruits	15.91	14.45	16.68	17.50	21.65
Fresh vegetables	24.81	25.83	27.29	28.12	38.47
Proc. fruits and veg.	23.93	22.31	23.04	24.09	25.58
Fats and oils	10.00	12.17	14.07	12.04	18.49
Miscellaneous	8.19	8.45	9.00	8.99	10.75
	Farm-retail spread				
Market basket	697.74	750.43	770.86	786.68	837.43
Meat	149.27	171.04	170.15	176.21	191.27
Dairy	108.47	114.62	119.13	119.97	125.13
Poultry	24.84	26.62	26.34	26.01	29.41
Eggs	14.97	16.56	16.38	16.28	17.18
Bakery and cereal:					
All ingredients	148.36	156.10	162.42	160.14	166.35
Grain	-	-	-	-	-
Fresh fruits	35.71	37.07	39.00	41.32	45.31
Fresh vegetables	51.35	55.59	56.16	60.05	70.96
Proc. fruits and veg.	92.39	96.93	102.15	103.88	109.58
Fats and oils	27.96	28.67	30.61	33.17	31.55
Miscellaneous	44.42	47.23	48.52	49.65	50.69
	Farmer's share				
	Percent				
Market basket	40.8	38.9	38.4	40.0	45.5
Meat	59.0	55.1	54.9	58.3	63.4
Dairy	48.0	47.6	47.2	47.6	49.7
Poultry	51.0	46.5	47.5	48.6	59.2
Eggs	66.6	62.6	57.2	57.1	69.6
Bakery and cereal:					
All ingredients	15.8	15.9	15.7	16.6	22.2
Grain	12.1	12.0	11.7	12.8	17.5
Fresh fruits	30.8	28.0	30.0	30.0	32.3
Fresh vegetables	32.6	31.7	32.7	31.9	35.2
Proc. fruits and veg.	20.6	18.7	18.4	18.8	18.9
Fats and oils	26.3	29.8	31.5	26.6	37.0
Miscellaneous	15.6	15.2	15.6	15.3	17.5

1/ Preliminary.

Table 25.--Farm food products: Retail price, farm value, farm-retail spread, and farmer's share of retail price, annual 1971-73.

Product 1/	Retail unit	Retail price			Farm value			Farm-retail spread			Farmer's share		
		1971	1972	1973	1971	1972	1973	1971	1972	1973	1971	1972	1973
		Cents									Percent		
Beef, Choice	Pound	104.3	113.8	135.5	67.9	72.5	90.1	36.4	41.3	45.4	65	64	66
Lamb, Choice	Pound	109.9	118.3	140.9	57.2	63.0	73.7	52.7	55.3	67.2	52	53	52
Pork	Pound	70.3	83.2	109.8	32.4	47.9	71.8	37.9	35.3	38.0	46	58	65
Butter	Pound	87.6	87.1	91.6	59.5	59.2	60.5	28.1	27.9	31.1	68	68	66
Cheese, American process	½ pound	52.8	54.3	60.4	22.9	24.1	29.8	29.9	30.2	30.6	43	44	49
Ice cream	½ gallon	85.4	85.8	91.0	28.5	29.3	33.0	56.9	56.5	58.0	33	34	36
Milk, evaporated	14½-ounce can	19.8	20.0	22.4	9.1	9.4	11.4	10.7	10.6	11.1	46	47	51
Milk, fresh:													
Home delivered	½ gallon	67.6	69.0	75.1	29.6	30.2	34.1	38.0	38.8	41.0	44	44	45
Sold in stores	½ gallon	58.9	59.8	65.4	29.6	30.2	34.1	29.3	29.6	31.3	50	51	52
Chicken, frying	Pound	41.0	41.4	59.6	19.3	20.0	35.3	21.7	21.4	24.3	47	48	59
Turkey	Pound	54.8	55.3	73.5	28.0	28.4	44.0	26.8	26.9	29.5	51	51	60
Eggs, large Grade A	Dozen	52.8	52.4	78.1	30.2	30.0	54.4	22.6	22.4	23.7	57	57	70
Bread, white:													
All ingredients	Pound	24.8	24.7	27.6	3.5	3.8	5.5	21.3	20.9	22.1	14	15	20
Wheat	Pound	-	-	-	2.6	2.9	4.1	-	-	-	10	12	15
Bread, whole wheat	Pound	38.8	39.4	42.8	3.1	3.4	5.0	35.7	36.0	37.8	8	9	12
Cookies, sandwich	Pound	54.5	55.2	57.8	6.6	6.3	8.8	47.9	48.9	49.0	12	11	15
Corn flakes	12 ounces	33.4	31.2	32.2	2.2	2.0	3.4	31.2	29.2	28.8	7	6	11
Flour, white	5 pounds	59.9	59.6	75.6	20.9	22.9	33.9	39.0	36.7	41.7	35	38	45
Rice, long grain	Pound	23.8	24.0	30.8	7.7	8.7	15.2	16.1	15.3	15.6	32	36	49
Apples	Pound	23.3	25.0	30.2	7.0	7.9	11.1	16.3	17.1	19.1	30	32	37
Grapefruit	Each	18.4	19.5	20.0	4.7	5.1	4.6	13.7	14.4	15.4	26	26	23
Lemons	Pound	32.9	34.6	38.4	9.7	9.8	11.3	23.2	24.8	27.1	30	28	29
Oranges	Dozen	94.2	94.0	105.3	23.0	20.5	23.4	71.2	73.5	81.9	24	22	22
Cabbage	Pound	13.4	14.2	17.8	4.1	4.3	6.4	9.3	9.9	11.4	31	30	36
Carrots	Pound	20.6	21.5	22.0	7.3	7.4	7.5	13.3	14.1	14.5	35	34	34
Celery	Pound	19.4	23.6	24.0	5.2	7.2	7.0	14.2	16.4	17.0	27	31	29
Cucumbers	Pound	28.4	28.9	32.2	10.6	11.2	12.0	17.8	17.7	20.2	37	39	37
Lettuce	Head	34.0	34.1	41.8	11.6	11.5	14.2	22.4	22.6	27.6	34	34	34
Onions	Pound	14.3	17.7	25.2	4.2	6.4	11.1	10.1	11.3	14.1	30	36	44
Peppers, green	Pound	52.8	50.3	54.6	21.8	18.9	19.2	31.0	31.4	35.4	41	38	35
Potatoes	10 pounds	85.9	92.4	136.8	21.2	24.3	45.4	64.7	68.1	91.4	25	26	33
Tomatoes	Pound	46.5	46.8	48.2	18.8	16.7	19.8	27.7	30.1	28.4	40	36	41

Continued--

Continued--

Table 25.--Farm food products: Retail price, farm value, farm-retail spread, and farmer's share of retail price, annual 1971-73.

Products	Retail unit	Retail price			Farm value			Farm-retail spread			Farmer's share		
		1971	1972	1973	1971	1972	1973	1971	1972	1973	1971	1972	1973
		Cents									Percent		
Peaches, canned	No. 2½ can	36.9	37.4	41.0	7.4	7.2	7.1	29.5	30.2	33.9	20	19	17
Pears, canned	No. 2½ can	52.9	53.5	56.6	11.7	10.4	12.1	41.2	43.1	44.5	22	19	21
Beets, canned	No. 303 can	19.5	20.7	23.4	1.3	1.3	1.5	18.2	20.4	21.9	7	6	6
Corn, canned	No. 303 can	24.8	24.5	25.0	2.6	2.8	2.9	22.2	21.7	22.1	10	11	12
Peas, canned	No. 303 can	26.2	26.4	27.0	3.9	4.0	4.2	22.3	22.4	22.8	15	15	16
Tomatoes, canned	No. 303 can	22.6	22.8	24.6	2.6	2.7	2.8	20.0	20.1	21.8	12	12	11
Lemonade, frozen	6-ounce can	13.9	14.4	14.7	3.3	3.8	3.8	10.6	10.6	10.9	24	26	26
Orange juice, frozen	6-ounce can	23.4	25.0	25.1	7.3	10.3	8.6	16.1	14.7	16.5	31	41	34
Potatoes, french fried, frozen	9 ounces	16.3	16.6	17.2	2.6	2.3	3.7	13.7	14.3	13.5	16	14	22
Peas, frozen	10 ounces	22.1	22.5	23.8	3.7	3.7	4.0	18.4	18.8	19.8	17	16	17
Beans, dried	Pound	22.3	24.9	31.2	11.4	10.7	17.1	10.9	14.2	14.1	51	43	55
Margarine	Pound	32.7	33.1	37.4	10.0	8.5	14.0	22.7	24.6	23.4	31	26	37
Peanut butter	12-ounce jar	49.5	50.5	52.3	15.4	17.0	18.1	34.1	33.5	34.2	31	34	35
Salad and cooking oil	24-oz. bottle	63.5	64.3	70.6	16.5	13.7	21.9	47.0	50.6	48.7	26	21	31
Vegetable shortening	3 pounds	96.9	97.4	110.6	35.9	30.2	48.8	61.0	67.2	61.8	37	31	44
Sugar	5 pounds	68.1	69.5	75.5	29.7	29.4	31.2	38.4	40.1	44.3	44	42	41
Spaghetti, canned	15½-oz. can	19.1	19.4	20.1	2.0	2.2	2.6	17.1	17.2	17.5	10	11	13

1/ Primary products in the farm-food market basket.
2/ Preliminary.

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